

Page Number : 8 of 13
 Client : CH2M HILL PTY LTD
 Work Order : ES0613192



Analytical Results

Client Sample ID :				BHD/7.0	BHD/8.4	BHG/6.0	BHG/7.2	BHG/8.1
Sample Matrix Type / Description :				SOIL	SOIL	SOIL	SOIL	SOIL
Sample Date / Time :				20 Oct 2006 15:00	20 Oct 2006 15:00	20 Oct 2006 15:00	20 Oct 2006 15:00	20 Oct 2006 15:00
Laboratory Sample ID :								
Analyte	CAS number	LOR	Units	ES0613192-013	ES0613192-014	ES0613192-015	ES0613192-016	ES0613192-017
EP080/071: Total Petroleum Hydrocarbons								
C29 - C36 Fraction		100	mg/kg	<100	<100	<100	<100	<100
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	5.4	7.5	2.4	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg	0.2	0.9	4.1	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg	0.7	<0.2	1.3	0.4	<0.2
meta- & para-Xylene	108-38-3	0.2	mg/kg	1.0	0.5	5.5	0.6	<0.2
	106-42-3							
ortho-Xylene	95-47-6	0.2	mg/kg	0.6	0.3	3.2	1.0	<0.2
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	80.5	84.5	91.7	86.9	85.1
2-Chlorophenol-D4	93951-73-6	0.1	%	86.8	86.8	93.7	89.5	87.1
2,4,6-Tribromophenol	118-79-6	0.1	%	73.1	73.6	76.4	73.5	69.8
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	86.3	89.8	87.3	91.4	89.3
Anthracene-d10	1719-06-8	0.1	%	82.5	86.5	85.3	87.5	85.8
4-Terphenyl-d14	1718-51-0	0.1	%	85.1	85.4	84.7	88.9	87.6
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	106	110	102	102	104
Toluene-D8	2037-26-5	0.1	%	101	106	99.7	103	104
4-Bromofluorobenzene	460-00-4	0.1	%	95.8	94.9	96.3	94.5	92.3

Page Number : 9 of 13
 Client : CH2M HILL PTY LTD
 Work Order : ES0613192



Analytical Results

				Client Sample ID :	TRIP SPIKE CONTROL	DUP23			
				Sample Matrix Type / Description :	3	SOIL			
				Sample Date / Time :	20 Oct 2006	20 Oct 2006			
				Laboratory Sample ID :	15:00	15:00			
Analyte	CAS number	LOR	Units	ES0613192-018	ES0613192-024				
EA055: Moisture Content									
Moisture Content (dried @ 103°C)		1.0	%	4.0	12.8				
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg	----	<0.5				
2-Chlorophenol	95-57-8	0.5	mg/kg	----	<0.5				
2-Methylphenol	95-48-7	0.5	mg/kg	----	<0.5				
3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	----	<1.0				
2-Nitrophenol	88-75-5	0.5	mg/kg	----	<0.5				
2,4-Dimethylphenol	105-67-9	0.5	mg/kg	----	<0.5				
2,4-Dichlorophenol	120-83-2	0.5	mg/kg	----	<0.5				
2,6-Dichlorophenol	87-65-0	0.5	mg/kg	----	<0.5				
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	----	<0.5				
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	----	<0.5				
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	----	<0.5				
Pentachlorophenol	87-86-5	2.0	mg/kg	----	<2.0				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5				
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5				
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5				
Fluorene	86-73-7	0.5	mg/kg	----	<0.5				
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5				
Anthracene	120-12-7	0.5	mg/kg	----	<0.5				
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5				
Pyrene	129-00-0	0.5	mg/kg	----	<0.5				
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5				
Chrysene	218-01-9	0.5	mg/kg	----	<0.5				
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	----	<0.5				
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5				
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5				
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5				
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	----	<0.5				
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	----	<0.5				
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction		2	mg/kg	32	<2				
C10 - C14 Fraction		50	mg/kg	<50	<50				
C15 - C28 Fraction		100	mg/kg	<100	<100				
C29 - C36 Fraction		100	mg/kg	<100	<100				

Page Number : 10 of 13
 Client : CH2M HILL PTY LTD
 Work Order : ES0613192



Analytical Results

				Client Sample ID :	TRIP SPIKE CONTROL	DUP23			
				Sample Matrix Type / Description :	3	SOIL			
				Sample Date / Time :	20 Oct 2006	20 Oct 2006			
				Laboratory Sample ID :	15:00	15:00			
					ES0613192-018	ES0613192-024			
Analyte	CAS number	LOR	Units						
EP080: BTEX									
Benzene	71-43-2	0.2	mg/kg		0.6	<0.2			
Toluene	108-88-3	0.2	mg/kg		9.7	<0.2			
Ethylbenzene	100-41-4	0.2	mg/kg		1.4	<0.2			
meta- & para-Xylene	108-38-3	0.2	mg/kg		7.4	<0.2			
	106-42-3								
ortho-Xylene	95-47-6	0.2	mg/kg		2.8	<0.2			
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		----	80.4			
2-Chlorophenol-D4	93951-73-6	0.1	%		----	82.1			
2,4,6-Tribromophenol	118-79-6	0.1	%		----	64.6			
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		----	85.9			
Anthracene-d10	1719-06-8	0.1	%		----	82.5			
4-Terphenyl-d14	1718-51-0	0.1	%		----	83.6			
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		99.0	106			
Toluene-D8	2037-26-5	0.1	%		102	100			
4-Bromofluorobenzene	460-00-4	0.1	%		94.9	92.0			

Page Number : 11 of 13
 Client : CH2M HILL PTY LTD
 Work Order : ES0613192



Analytical Results

Client Sample ID :				EQ2	EQ3			
Sample Matrix Type / Description :				WATER	WATER			
Sample Date / Time :				18 Oct 2006 15:00	19 Oct 2006 15:00			
Laboratory Sample ID :								
Analyte	CAS number	LOR	Units	ES0613192-001	ES0613192-009			
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0			
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0			
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0			
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0			
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0			
2,4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0			
2,4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0			
2,6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0			
4-Chloro-3-Methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0			
2,4,6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0			
2,4,5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0			
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0			
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0			
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0			
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0			
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0			
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0			
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0			
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0			
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0			
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0			
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0			
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0			
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0			
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5			
Indeno(1,2,3-cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0			
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0			
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0			
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		20	µg/L	<20	<20			
C10 - C14 Fraction		50	µg/L	<50	130			
C15 - C28 Fraction		100	µg/L	<100	200			
C29 - C36 Fraction		50	µg/L	<50	<50			
EP080: BTEX								
Benzene	71-43-2	1	µg/L	<1	<1			
Toluene	108-88-3	2	µg/L	<2	<2			

Page Number : 12 of 13
 Client : CH2M HILL PTY LTD
 Work Order : ES0613192



Analytical Results

				Client Sample ID :	EQ2	EQ3			
				Sample Matrix Type / Description :	WATER	WATER			
				Sample Date / Time :	18 Oct 2006 15:00	19 Oct 2006 15:00			
				Laboratory Sample ID :					
Analyte	CAS number	LOR	Units		ES0613192-001	ES0613192-009			
EP080: BTEX									
Ethylbenzene	100-41-4	2	µg/L		<2	<2			
meta- & para-Xylene	108-38-3	2	µg/L		<2	<2			
	106-42-3								
ortho-Xylene	95-47-6	2	µg/L		<2	<2			
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		29.4	30.4			
2-Chlorophenol-D4	93951-73-6	0.1	%		88.5	89.5			
2,4,6-Tribromophenol	118-79-6	0.1	%		99.2	101			
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		85.4	89.5			
Anthracene-d10	1719-06-8	0.1	%		90.5	92.9			
4-Terphenyl-d14	1718-51-0	0.1	%		90.0	94.2			
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.1	%		95.3	110			
Toluene-D8	2037-26-5	0.1	%		102	93.2			
4-Bromofluorobenzene	460-00-4	0.1	%		103	92.3			

Surrogate Control Limits

Matrix Type: WATER - Surrogate Control Limits

		Surrogate Control Limits	
Method name	Analyte name	Lower Limit	Upper Limit
EP075(SIM): PAH/Phenols (GC/MS - SIM)			
EP075(SIM)S: Phenolic Compound Surrogates	Phenol-d6	10	94
	2-Chlorophenol-D4	23	134
	2,4,6-Tribromophenol	10	123
EP075(SIM)T: PAH Surrogates	2-Fluorobiphenyl	43	116
	Anthracene-d10	27	133
	4-Terphenyl-d14	33	141
EP080: TPH Volatiles/BTEX			
EP080S: TPH(V)/BTEX Surrogates	1,2-Dichloroethane-D4	80	120
	Toluene-D8	88	110
	4-Bromofluorobenzene	86	115

Matrix Type: SOIL - Surrogate Control Limits

		Surrogate Control Limits	
Method name	Analyte name	Lower Limit	Upper Limit
EP075(SIM): PAH/Phenols (SIM)			
EP075(SIM)S: Phenolic Compound Surrogates	Phenol-d6	24	113
	2-Chlorophenol-D4	23	134
	2,4,6-Tribromophenol	19	122
EP075(SIM)T: PAH Surrogates	2-Fluorobiphenyl	30	115
	Anthracene-d10	27	133
	4-Terphenyl-d14	18	137
EP080: TPH Volatiles/BTEX			
EP080S: TPH(V)/BTEX Surrogates	1,2-Dichloroethane-D4	80	120
	Toluene-D8	81	117
	4-Bromofluorobenzene	74	121

CH2MHILL ACN 050 070 892
CHAIN OF CUSTODY RECORD

Level 7, 9 Help Street, Chatswood, NSW 2067 Australia Tel (61 2) 9950 0200 Fax (61 2) 9950 0600

Laboratory
Quotation #

1/2

COC # 5550

Project # 347496		Purchase Order # SY/148/06		TOTAL # OF CONTAINERS	Requested Analytical Method #								QA REQUIREMENTS				
Project Name Macdonaldtown Gasworks					S-7 Phenols EK026 S-4 HOLD								Matrix Spike	☐ Yes	☐ No		
Company Name ALS													Matrix Duplicate	☐ Yes	☐ No		
Project Manager or Contact & Phone # Adam Sullivan 0400 500 264													Laboratory Duplicate	☐ Yes	☐ No		
Report Copy to: →													Lab Blank	☐ Yes	☐ No		
Requested Completion Date: standard TAT		Site ID Macdonaldtown		Sample Disposal: Dispose ☒ Return ☐		Preservative								LAB USE ONLY			
Sampling		Type	Matrix	CLIENT SAMPLE ID (9 CHARACTERS)				LAB QC									
Date	Time																
18/10			X	EQ2						X	X						
19/10			X	BH12A/6.0						X	X						
19/10				BH12A/9.0													
19/10				BH B/7.2													
19/10				BH B/9.0						X	X						
19/10				BH C/3.6													
19/10				BH C/6.0						X	X						
19/10				BH E/7.2													
19/10				BH E/8.4						X	X	X					
18/10				BH F/8.5						X	X	X					
18/10				BH F/9.0								X					
				Trip Spike (B)													
Sampled By and Title A. Sullivan				(Please sign and print name)				Date/Time 20/10/06		Relinquished By A. Sullivan				(Please sign and print name)			
Received By Sarah Mully				(Please sign and print name)				Date/Time 20/10/06 17:00		Relinquished By				(Please sign and print name)			
Received By JESSIE Jodovic				(Please sign and print name)				Date/Time 20-10-06-15:15		Shipped Via				Shipping #			
Special Instructions:																	

ALS Environmental
Sydney
Work Order
ES0613192



Telephone : + 61 (02) 8784 8555

Very High Contamination

CH2MHILL ACN 050 070 892
CHAIN OF CUSTODY RECORD

Level 7, 9 Help Street, Chatswood, NSW 2067 Australia Tel (61 2) 9950 0200 Fax (61 2) 9950 0600

Laboratory
 Quotation #

2/2

COC # 5559

Project # 347496		Purchase Order # SY/148/06		TOTAL # OF CONTAINERS	Requested Analytical Method #								QA REQUIREMENTS										
Project Name Macdonaldtown Gasworks					S-7 Phenols EK026 S-4 HOLD									Matrix Spike	☐ Yes ☐ No								
Company Name ALS														Matrix Duplicate	☐ Yes ☐ No								
Project Manager or Contact & Phone # Adam Sullivan 0400 500 264														Laboratory Duplicate	☐ Yes ☐ No								
Report Copy to:														Lab Blank	☐ Yes ☐ No								
Requested Completion Date: standard TAT														Surrogate Spike	☐ Yes ☐ No								
Site ID Macdonaldtown														RPDs	☐ Yes ☐ No								
Sample Disposal: Dispose ☒ Return ☐														Spike Recovery Data	☐ Yes ☐ No								
														Preservative								LAB USE ONLY	
																						Custody Seals ☐ Yes ☐ No	
												ICE ☐ Yes ☐ No											
Sampling		Type	Matrix	CLIENT SAMPLE ID (9 CHARACTERS)		LAB QC																	
Date	Time		Soil water																				
			X	Trip Blank (3)																			
19/10			X	EQ 3				X	X														
20/10			X	BHC 1/8.0				X	X														
20/10				DJP 23							X												
20/10				BHC 2/6.0				X	X														
20/10				BHC 2/8.0				X	X														
"				BHC 1/7.0				X	X														
"				BHC 1/8.4				X	X														
"				BHC 1/6.0				X	X	X													
"				BHC 1/7.2				X	X														
"				BHC 1/8.1				X	X														
				TRIP SPIKE CONTROL 3							X												
Sampled By and Title				(Please sign and print name)		Date/Time		Relinquished By				(Please sign and print name)		Date/Time									
Received by				(Please sign and print name)		Date/Time		Relinquished By				(Please sign and print name)		Date/Time									
Received by				(Please sign and print name)		Date/Time		Shipped Via				Shipping #											
Special Instructions:						20-10-06																	
						5:15P--																	

Very High Contamination



QUALITY CONTROL REPORT

Client	: CH2M HILL PTY LTD	Laboratory	: ALS Environmental Sydney	Page	: 1 of 13
Contact	: MR ADAM SULLIVAN	Contact	: Greg Vogel		
Address	: PO BOX 5392 CHATSWOOD NSW AUSTRALIA 1515	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164	Work order	: ES0613192
				Amendment No.	:
Project	: 347496 Macdonaldtown Gasworks	Quote number	: ----	Date received	: 20 Oct 2006
Order number	: - Not provided -			Date issued	: 30 Oct 2006
C-O-C number	: - Not provided -				
Site	: - Not provided -				
E-mail	: adam.sullivan@ch2m.com.au	E-mail	: Greg.Vogel@alsenviro.com	No. of samples	
Telephone	: 02 9950 0200	Telephone	: +61 (02) 8784 8555	Received	: 24
Facsimile	: 02 9950 0600	Facsimile	: +61 (02) 8784 8500	Analysed	: 19

This final report for the ALSE work order reference ES0613192 supersedes any previous reports with this reference.

Results apply to the samples as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- 1 Laboratory Duplicates (DUP); Relative Percentage Difference (RPD) and Acceptance Limits
- 1 Method Blank (MB) and Laboratory Control Samples (LCS); Recovery and Acceptance Limits
- 1 Matrix Spikes (MS); Recovery and Acceptance Limits

Work order specific comments

EP080:ES0613192 #4 required dilution(X10) due to the presence of high level contaminants. LOR values have been adjusted accordingly.

ALSE - Excellence in Analytical Testing



NATA Accredited Laboratory - 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IEC 17025

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory

PHALAK INTAKESONE
Sarah Millington

Department

Organics - NATA 825 (10911 - Sydney)
Inorganics - NATA 825 (10911 - Sydney)

Client : CH2M HILL PTY LTD
Project : 347496 Macdonaldtown Gasworks

Work Order : ES0613192
ALS Quote Reference : ----

Page Number : 2 of 13
Issue Date : 30 Oct 2006

Quality Control Report - Laboratory Duplicates (DUP)

The quality control term **Laboratory Duplicate** refers to an intralaboratory split sample randomly selected from the sample batch. Laboratory duplicates provide information on method precision and sample heterogeneity.

- Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations: LOR = Limit of Reporting, RPD = Relative Percent Difference.*

* Indicates failed QC. The permitted ranges for the RPD of Laboratory Duplicates (relative percent deviation) 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%

Matrix Type: SOIL

Laboratory Duplicates (DUP) Report

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EA055: Moisture Content						
EA055: Moisture Content - (QC Lot: 295671)				%	%	%
ES0613192-002	BH12A/6.0	Moisture Content (dried @ 103°C)	1.0 %	11.9	13.3	11.4
ES0613192-012	BHC2/8.0	Moisture Content (dried @ 103°C)	1.0 %	12.7	11.0	13.9
EK026G: Total Cyanide By Discrete Analyser						
EK026G: Total Cyanide By Discrete Analyser - (QC Lot: 295910)				mg/kg	mg/kg	%
ES0613192-005	BHE/8.4	Total Cyanide	1.0 mg/kg	<1.0	<1.0	0.0
EP075(SIM)A: Phenolic Compounds						
EP075(SIM)A: Phenolic Compounds - (QC Lot: 295668)				mg/kg	mg/kg	%
ES0613161-001	Anonymous	Phenol	0.5 mg/kg	<0.5	<0.5	0.0
		2-Chlorophenol	0.5 mg/kg	<0.5	<0.5	0.0
		2-Methylphenol	0.5 mg/kg	<0.5	<0.5	0.0
		3- & 4-Methylphenol	1.0 mg/kg	<1.0	<1.0	0.0
		2-Nitrophenol	0.5 mg/kg	<0.5	<0.5	0.0
		2,4-Dimethylphenol	0.5 mg/kg	<0.5	<0.5	0.0
		2,4-Dichlorophenol	0.5 mg/kg	<0.5	<0.5	0.0
		2,6-Dichlorophenol	0.5 mg/kg	<0.5	<0.5	0.0
		4-Chloro-3-Methylphenol	0.5 mg/kg	<0.5	<0.5	0.0
		2,4,6-Trichlorophenol	0.5 mg/kg	<0.5	<0.5	0.0
		2,4,5-Trichlorophenol	0.5 mg/kg	<0.5	<0.5	0.0
		Pentachlorophenol	2.0 mg/kg	<2.0	<2.0	0.0
ES0613192-011	BHC2/6.0	Phenol	0.5 mg/kg	<0.5	<0.5	0.0
		2-Chlorophenol	0.5 mg/kg	<0.5	<0.5	0.0
		2-Methylphenol	0.5 mg/kg	<0.5	<0.5	0.0
		3- & 4-Methylphenol	1.0 mg/kg	<1.0	<1.0	0.0
		2-Nitrophenol	0.5 mg/kg	<0.5	<0.5	0.0
		2,4-Dimethylphenol	0.5 mg/kg	<0.5	<0.5	0.0

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Matrix Type: SOIL **Laboratory Duplicates (DUP) Report**

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP075(SIM)A: Phenolic Compounds - continued						
EP075(SIM)A: Phenolic Compounds - (QC Lot: 295668) - continued				mg/kg	mg/kg	%
ES0613192-011	BHC2/6.0	2,4-Dichlorophenol	0.5 mg/kg	<0.5	<0.5	0.0
		2,6-Dichlorophenol	0.5 mg/kg	<0.5	<0.5	0.0
		4-Chloro-3-Methylphenol	0.5 mg/kg	<0.5	<0.5	0.0
		2,4,6-Trichlorophenol	0.5 mg/kg	<0.5	<0.5	0.0
		2,4,5-Trichlorophenol	0.5 mg/kg	<0.5	<0.5	0.0
		Pentachlorophenol	2.0 mg/kg	<2.0	<2.0	0.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 295668)				mg/kg	mg/kg	%
ES0613161-001	Anonymous	Naphthalene	0.5 mg/kg	1.0	1.2	22.5
		Acenaphthylene	0.5 mg/kg	1.0	1.1	0.0
		Acenaphthene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluorene	0.5 mg/kg	<0.5	<0.5	0.0
		Phenanthrene	0.5 mg/kg	4.6	4.8	5.2
		Anthracene	0.5 mg/kg	1.4	1.4	0.0
		Fluoranthene	0.5 mg/kg	9.9	9.4	4.7
		Pyrene	0.5 mg/kg	10.0	9.7	2.8
		Benz(a)anthracene	0.5 mg/kg	5.0	5.0	0.0
		Chrysene	0.5 mg/kg	5.3	5.2	0.0
		Benzo(b)fluoranthene	0.5 mg/kg	5.2	5.4	3.2
		Benzo(k)fluoranthene	0.5 mg/kg	2.7	2.7	0.0
		Benzo(a)pyrene	0.5 mg/kg	4.8	4.8	0.0
		Indeno(1,2,3,cd)pyrene	0.5 mg/kg	2.4	2.4	0.0
		Dibenz(a,h)anthracene	0.5 mg/kg	0.7	0.7	0.0
		Benzo(g,h,i)perylene	0.5 mg/kg	2.7	2.7	0.0
ES0613192-011	BHC2/6.0	Naphthalene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthylene	0.5 mg/kg	<0.5	<0.5	0.0
		Acenaphthene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluorene	0.5 mg/kg	<0.5	<0.5	0.0
		Phenanthrene	0.5 mg/kg	<0.5	<0.5	0.0

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Matrix Type: SOIL **Laboratory Duplicates (DUP) Report**

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - continued						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 295668) - continued				mg/kg	mg/kg	%
ES0613192-011	BHC2/6.0	Anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Benz(a)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Chrysene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(b)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(k)fluoranthene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(a)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Indeno(1,2,3,cd)pyrene	0.5 mg/kg	<0.5	<0.5	0.0
		Dibenz(a,h)anthracene	0.5 mg/kg	<0.5	<0.5	0.0
		Benzo(g,h,i)perylene	0.5 mg/kg	<0.5	<0.5	0.0
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 295038)				mg/kg	mg/kg	%
ES0613186-007	Anonymous	C6 - C9 Fraction	2 mg/kg	3	<2	0.0
ES0613192-010	BHC1/8.0	C6 - C9 Fraction	2 mg/kg	<2	<2	0.0
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 295669)				mg/kg	mg/kg	%
ES0613161-001 ES0613192-011	Anonymous	C10 - C14 Fraction	50 mg/kg	<50	<50	0.0
		C15 - C28 Fraction	100 mg/kg	390	410	6.1
		C29 - C36 Fraction	100 mg/kg	190	260	29.9
	BHC2/6.0	C10 - C14 Fraction	50 mg/kg	<50	<50	0.0
		C15 - C28 Fraction	100 mg/kg	<100	<100	0.0
		C29 - C36 Fraction	100 mg/kg	<100	<100	0.0
EP080: BTEX						
EP080: BTEX - (QC Lot: 295038)				mg/kg	mg/kg	%
ES0613186-007	Anonymous	Benzene	0.2 mg/kg	<0.2	<0.2	0.0
		Toluene	0.2 mg/kg	<0.2	<0.2	0.0
		Ethylbenzene	0.2 mg/kg	<0.2	<0.2	0.0
		meta- & para-Xylene	0.2 mg/kg	<0.2	<0.2	0.0
		ortho-Xylene	0.2 mg/kg	<0.2	<0.2	0.0

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Matrix Type: SOIL **Laboratory Duplicates (DUP) Report**

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP080: BTEX - continued						
EP080: BTEX - (QC Lot: 295038) - continued				mg/kg	mg/kg	%
ES0613192-010	BHC1/8.0	Benzene	0.2 mg/kg	<0.2	<0.2	0.0
		Toluene	0.2 mg/kg	<0.2	<0.2	0.0
		Ethylbenzene	0.2 mg/kg	<0.2	<0.2	0.0
		meta- & para-Xylene	0.2 mg/kg	<0.2	<0.2	0.0
		ortho-Xylene	0.2 mg/kg	<0.2	<0.2	0.0

Matrix Type: WATER **Laboratory Duplicates (DUP) Report**

Laboratory Sample ID	Client Sample ID	Analyte name	LOR	Original Result	Duplicate Result	RPD
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 294477)				µg/L	µg/L	%
ES0613192-009	EQ3	C6 - C9 Fraction	20 µg/L	<20	<20	0.0
ES0613204-017	Anonymous	C6 - C9 Fraction	20 µg/L	<20	<20	0.0
EP080: BTEX						
EP080: BTEX - (QC Lot: 294477)				µg/L	µg/L	%
ES0613192-009	EQ3	Benzene	1 µg/L	<1	<1	0.0
		Toluene	2 µg/L	<2	<2	0.0
		Ethylbenzene	2 µg/L	<2	<2	0.0
		meta- & para-Xylene	2 µg/L	<2	<2	0.0
		ortho-Xylene	2 µg/L	<2	<2	0.0
ES0613204-017	Anonymous	Benzene	1 µg/L	<1	<1	0.0
		Toluene	2 µg/L	<2	<2	0.0
		Ethylbenzene	2 µg/L	<2	<2	0.0
		meta- & para-Xylene	2 µg/L	<2	<2	0.0
		ortho-Xylene	2 µg/L	<2	<2	0.0

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Quality Control Report - Method Blank (MB) and Laboratory Control Samples (LCS)

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 type is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a known, interference free matrix spiked with target analytes or certified reference material. The purpose of this QC type is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of actual laboratory data. Flagged outliers on control limits for inorganics tests may be within the NEPM specified data quality objective of recoveries in the range of 70 to 130%. Where this occurs, no corrective action is taken. Abbreviations: LOR = Limit of reporting.

Matrix Type: SOIL

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

		Method blank result	Actual Results		Recovery Limits	
Analyte name	LOR		Spike concentration	Spike Recovery	Dynamic Recovery Limits	
				LCS	Low	High
EK026G: Total Cyanide By Discrete Analyser						
EK026G: Total Cyanide By Discrete Analyser - (QC Lot: 295910)		mg/kg	mg/kg	%	%	%
Total Cyanide	1 mg/kg	----	50	110	70	130
	1.0 mg/kg	<1.0	----	----	----	----
EP075(SIM)A: Phenolic Compounds						
EP075(SIM)A: Phenolic Compounds - (QC Lot: 295668)		mg/kg	mg/kg	%	%	%
2,4,5-Trichlorophenol	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	89.5	68.9	112
2,4,6-Trichlorophenol	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	91.0	62.2	115
2,4-Dichlorophenol	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	97.8	71.6	113
2,4-Dimethylphenol	0.5 mg/kg	----	4	109	74.5	119
	0.5 mg/kg	<0.5	----	----	----	----
2,6-Dichlorophenol	0.5 mg/kg	----	4	102	74.8	115
	0.5 mg/kg	<0.5	----	----	----	----
2-Chlorophenol	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	100	80.2	115
2-Methylphenol	0.5 mg/kg	----	4	106	76.8	114
	0.5 mg/kg	<0.5	----	----	----	----
2-Nitrophenol	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	101	60.3	117
3- & 4-Methylphenol	1.0 mg/kg	<1.0	----	----	----	----
	1.0 mg/kg	----	8	105	72	119
4-Chloro-3-Methylphenol	0.5 mg/kg	----	4	103	76.4	114
	0.5 mg/kg	<0.5	----	----	----	----

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Matrix Type: SOIL Method Blank (MB) and Laboratory Control Samples (LCS) Report

		Method blank result	Actual Results		Recovery Limits	
Analyte name	LOR		Spike concentration	Spike Recovery	Dynamic Recovery Limits	
				LCS	Low	High
EP075(SIM)A: Phenolic Compounds - continued						
EP075(SIM)A: Phenolic Compounds - (QC Lot: 295668) - continued		mg/kg	mg/kg	%	%	%
Pentachlorophenol	1.0 mg/kg	----	8	33.8	1.23	91.6
	1.0 mg/kg	<1.0	----	----	----	----
Phenol	0.5 mg/kg	----	4	104	73.9	115
	0.5 mg/kg	<0.5	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 295668)		mg/kg	mg/kg	%	%	%
Acenaphthene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	106	81.5	112
Acenaphthylene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	107	79.6	113
Anthracene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	105	81.1	112
Benz(a)anthracene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	103	77.2	112
Benzo(a)pyrene	0.5 mg/kg	----	4	103	76.4	113
	0.5 mg/kg	<0.5	----	----	----	----
Benzo(b)fluoranthene	0.5 mg/kg	----	4	99.6	71.8	118
	0.5 mg/kg	<0.5	----	----	----	----
Benzo(g,h,i)perylene	0.5 mg/kg	----	4	91.8	72.4	114
	0.5 mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	84.7	74.2	117
Chrysene	0.5 mg/kg	----	4	104	79.8	114
	0.5 mg/kg	<0.5	----	----	----	----
Dibenz(a,h)anthracene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	93.6	71.7	113
Fluoranthene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	102	78.8	113
Fluorene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	105	79.9	112

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Matrix Type: SOIL Method Blank (MB) and Laboratory Control Samples (LCS) Report

		Method blank result	Actual Results		Recovery Limits	
Analyte name	LOR		Spike concentration	Spike Recovery	Dynamic Recovery Limits	
				LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - continued						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 295668) - continued		mg/kg	mg/kg	%	%	%
Indeno(1,2,3,cd)pyrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	94.1	71	113
Naphthalene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	107	81.9	113
Phenanthrene	0.5 mg/kg	----	4	106	79.4	114
	0.5 mg/kg	<0.5	----	----	----	----
Pyrene	0.5 mg/kg	<0.5	----	----	----	----
	0.5 mg/kg	----	4	101	78.9	113
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 295038)		mg/kg	mg/kg	%	%	%
C6 - C9 Fraction	2 mg/kg	<2	----	----	----	----
	2 mg/kg	----	26	89.9	68.4	128
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 295669)		mg/kg	mg/kg	%	%	%
C10 - C14 Fraction	50 mg/kg	----	200	111	75.2	116
	50 mg/kg	<50	----	----	----	----
C15 - C28 Fraction	100 mg/kg	<100	----	----	----	----
	100 mg/kg	----	200	108	75.3	113
C29 - C36 Fraction	100 mg/kg	<100	----	----	----	----
	100 mg/kg	----	200	113	72.6	117
EP080: BTEX						
EP080: BTEX - (QC Lot: 295038)		mg/kg	mg/kg	%	%	%
Benzene	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	1	92.8	67.5	125
Ethylbenzene	0.2 mg/kg	----	1	88.0	65.3	126
	0.2 mg/kg	<0.2	----	----	----	----
meta- & para-Xylene	0.2 mg/kg	----	2	91.4	66.5	124
	0.2 mg/kg	<0.2	----	----	----	----
ortho-Xylene	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	1	89.5	66.7	123

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Matrix Type: SOIL **Method Blank (MB) and Laboratory Control Samples (LCS) Report**

		Method blank result	Actual Results		Recovery Limits	
Analyte name	LOR		Spike concentration	Spike Recovery	Dynamic Recovery Limits	
				LCS	Low	High
EP080: BTEX - continued						
EP080: BTEX - (QC Lot: 295038) - continued		mg/kg	mg/kg	%	%	%
Toluene	0.2 mg/kg	<0.2	----	----	----	----
	0.2 mg/kg	----	1	84.1	69	122

Matrix Type: WATER **Method Blank (MB) and Laboratory Control Samples (LCS) Report**

		Method blank result	Actual Results		Recovery Limits	
Analyte name	LOR		Spike concentration	Spike Recovery	Dynamic Recovery Limits	
				LCS	Low	High
EP075(SIM)A: Phenolic Compounds						
EP075(SIM)A: Phenolic Compounds - (QC Lot: 294257)		µg/L	µg/L	%	%	%
2,4,5-Trichlorophenol	0.2 µg/L	----	2	97.7	65.3	121
	0.5 µg/L	<0.5	----	----	----	----
2,4,6-Trichlorophenol	0.2 µg/L	----	2	101	63.1	122
	0.5 µg/L	<0.5	----	----	----	----
2,4-Dichlorophenol	0.2 µg/L	----	2	101	64.4	121
	0.5 µg/L	<0.5	----	----	----	----
2,4-Dimethylphenol	0.2 µg/L	----	2	90.9	61.7	118
	0.5 µg/L	<0.5	----	----	----	----
2,6-Dichlorophenol	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	100	65.7	120
2-Chlorophenol	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	94.4	62.3	117
2-Methylphenol	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	86.5	53.9	110
2-Nitrophenol	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	96.9	58.2	127
3- & 4-Methylphenol	0.4 µg/L	----	4	78.5	40.9	103
	1.0 µg/L	<1.0	----	----	----	----
4-Chloro-3-Methylphenol	0.2 µg/L	----	2	102	66.4	119
	0.5 µg/L	<0.5	----	----	----	----
Pentachlorophenol	0.4 µg/L	----	4	86.8	10.9	145
	1.0 µg/L	<1.0	----	----	----	----

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Matrix Type: WATER

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

		Method blank result	Actual Results		Recovery Limits	
Analyte name	LOR		Spike concentration	Spike Recovery	Dynamic Recovery Limits	
				LCS	Low	High
EP075(SIM)A: Phenolic Compounds - continued						
EP075(SIM)A: Phenolic Compounds - (QC Lot: 294257) - continued		µg/L	µg/L	%	%	%
Phenol	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	45.4	19.5	60.7
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 294257)		µg/L	µg/L	%	%	%
Acenaphthene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	82.6	62.2	113
Acenaphthylene	0.2 µg/L	----	2	91.8	63.6	114
	0.5 µg/L	<0.5	----	----	----	----
Anthracene	0.2 µg/L	----	2	108	64.3	116
	0.5 µg/L	<0.5	----	----	----	----
Benz(a)anthracene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	117	64.1	117
Benzo(a)pyrene	0.2 µg/L	----	2	113	63.3	117
	0.5 µg/L	<0.5	----	----	----	----
Benzo(b)fluoranthene	0.2 µg/L	----	2	121	61.7	119
	0.5 µg/L	<0.5	----	----	----	----
Benzo(g,h,i)perylene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	115	59.1	118
Benzo(k)fluoranthene	0.2 µg/L	----	2	113	61.7	117
	0.5 µg/L	<0.5	----	----	----	----
Chrysene	0.2 µg/L	----	2	115	62.5	116
	0.5 µg/L	<0.5	----	----	----	----
Dibenz(a,h)anthracene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	115	61.2	117
Fluoranthene	0.2 µg/L	----	2	112	63.6	118
	0.5 µg/L	<0.5	----	----	----	----
Fluorene	0.5 µg/L	<0.5	----	----	----	----
	0.2 µg/L	----	2	99.0	63.9	115
Indeno(1,2,3,cd)pyrene	0.2 µg/L	----	2	115	59.9	118
	0.5 µg/L	<0.5	----	----	----	----

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Matrix Type: WATER

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

		Method blank result	Actual Results		Recovery Limits	
Analyte name	LOR		Spike concentration	Spike Recovery	Dynamic Recovery Limits	
				LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - continued						
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 294257) - continued		µg/L	µg/L	%	%	%
Naphthalene	0.2 µg/L	----	2	73.7	62.4	114
	0.5 µg/L	<0.5	----	----	----	----
Phenanthrene	0.2 µg/L	----	2	108	62.6	116
	0.5 µg/L	<0.5	----	----	----	----
Pyrene	0.2 µg/L	----	2	119	63.1	118
	0.5 µg/L	<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons						
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 294256)		µg/L	µg/L	%	%	%
C10 - C14 Fraction	50 µg/L	<50	----	----	----	----
	50 µg/L	----	200	69.5	58.9	131
C15 - C28 Fraction	100 µg/L	----	200	90.5	73.9	138
	100 µg/L	<100	----	----	----	----
C29 - C36 Fraction	50 µg/L	<50	----	----	----	----
	50 µg/L	----	200	93.5	62.7	131
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 294477)		µg/L	µg/L	%	%	%
C6 - C9 Fraction	20 µg/L	<20	----	----	----	----
	20 µg/L	----	260	103	75	127
EP080: BTEX						
EP080: BTEX - (QC Lot: 294477)		µg/L	µg/L	%	%	%
Benzene	1 µg/L	<1	----	----	----	----
	1 µg/L	----	10	93.2	76.2	124
Ethylbenzene	2 µg/L	----	10	95.3	76.1	122
	2 µg/L	<2	----	----	----	----
meta- & para-Xylene	2 µg/L	<2	----	----	----	----
	2 µg/L	----	10	96.6	75.7	123
ortho-Xylene	2 µg/L	<2	----	----	----	----
	2 µg/L	----	10	95.5	77.9	121
Toluene	2 µg/L	----	10	97.4	74.4	124
	2 µg/L	<2	----	----	----	----

Client : CH2M HILL PTY LTD
 Project : 347496 Macdonaldtown Gasworks

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Quality Control Report - Matrix Spikes (MS)

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 type is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQO's). 'Ideal' recovery ranges stated may be waived in the event of sample matrix interferences. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot. *Abbreviations: LOR = Limit of Reporting, RPD = Relative Percent Difference.*

* Indicates failed QC

Matrix Type: SOIL **Matrix Spike (MS) Report**

					Actual Results		Recovery Limits		
Analyte name		Laboratory Sample ID	Client Sample ID	LOR	Spike Concentration	Sample Result	Spike Recovery	Static Limits	
							MS	Low	High
EK026G: Total Cyanide By Discrete Analyser									
EK026G: Total Cyanide By Discrete Analyser - (QC Lot: 295910)					mg/kg	mg/kg	%	%	%
Total Cyanide	ES0613192-005	BHE/8.4	1 mg/kg	50	<1.0	97.2	70	130	
EP075(SIM)A: Phenolic Compounds									
EP075(SIM)A: Phenolic Compounds - (QC Lot: 295668)					mg/kg	mg/kg	%	%	%
Phenol	ES0613161-001	Anonymous	0.5 mg/kg	10	<0.5	73.9	70	130	
2-Chlorophenol			0.5 mg/kg	10	<0.5	75.7	70	130	
2-Nitrophenol			0.5 mg/kg	10	<0.5	74.0	60	130	
4-Chloro-3-Methylphenol			0.5 mg/kg	10	<0.5	75.4	70	130	
Pentachlorophenol			2.0 mg/kg	10	<2.0	61.6	20	130	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - (QC Lot: 295668)					mg/kg	mg/kg	%	%	%
Acenaphthene	ES0613161-001	Anonymous	0.5 mg/kg	10	<0.5	75.9	70	130	
Pyrene			0.5 mg/kg	10	10.0	106	70	130	
EP080/071: Total Petroleum Hydrocarbons									
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 295038)					mg/kg	mg/kg	%	%	%
C6 - C9 Fraction	ES0613186-007	Anonymous	2 mg/kg	26	3	91.7	70	130	
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 295669)					mg/kg	mg/kg	%	%	%
C10 - C14 Fraction	ES0613161-001	Anonymous	50 mg/kg	700	<50	93.5	70	130	
C15 - C28 Fraction			100 mg/kg	3400	390	114	70	130	
C29 - C36 Fraction			100 mg/kg	3600	190	77.3	70	130	
EP080: BTEX									
EP080: BTEX - (QC Lot: 295038)					mg/kg	mg/kg	%	%	%
Benzene	ES0613186-007	Anonymous	0.2 mg/kg	2.5	<0.2	87.1	70	130	
Toluene			0.2 mg/kg	2.5	<0.2	75.6	70	130	
Ethylbenzene			0.2 mg/kg	2.5	<0.2	84.2	70	130	

Client : CH2M HILL PTY LTD
Project : 347496 Macdonaldtown Gasworks

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Matrix Type: SOIL Matrix Spike (MS) Report

					Actual Results		Recovery Limits	
					Sample Result	Spike Recovery	Static Limits	
						MS	Low	High
Analyte name	Laboratory Sample ID	Client Sample ID	LOR	Spike Concentration				
EP080: BTEX - continued								
EP080: BTEX - (QC Lot: 295038) - continued				mg/kg	mg/kg	%	%	%
meta- & para-Xylene	ES0613186-007	Anonymous	0.2 mg/kg	2.5	<0.2	85.3	70	130
ortho-Xylene			0.2 mg/kg	2.5	<0.2	83.1	70	130

Matrix Type: WATER Matrix Spike (MS) Report

					Actual Results		Recovery Limits	
Analyte name	Laboratory Sample ID	Client Sample ID	LOR	Spike Concentration	Sample Result	Spike Recovery	Static Limits	
						MS	Low	High
EP080/071: Total Petroleum Hydrocarbons								
EP080/071: Total Petroleum Hydrocarbons - (QC Lot: 294477)				µg/L	µg/L	%	%	%
C6 - C9 Fraction	ES0613204-017	Anonymous	20 µg/L	250	<20	87.7	70	130
EP080: BTEX								
EP080: BTEX - (QC Lot: 294477)				µg/L	µg/L	%	%	%
Benzene	ES0613204-017	Anonymous	1 µg/L	25	<1	73.7	70	130
Toluene			2 µg/L	25	<2	76.3	70	130
Ethylbenzene			2 µg/L	25	<2	81.8	70	130
meta- & para-Xylene			2 µg/L	25	<2	83.7	70	130
ortho-Xylene			2 µg/L	25	<2	76.7	70	130

INTERPRETIVE QUALITY CONTROL REPORT

Client	: CH2M HILL PTY LTD	Laboratory	: ALS Environmental Sydney	Page	: 1 of 6
Contact	: MR ADAM SULLIVAN	Contact	: Greg Vogel		
Address	: PO BOX 5392 CHATSWOOD NSW AUSTRALIA 1515	Address	: Smithfield NSW Australia 2164	Work order	: ES0613192
				Amendment No.	:
Project	: 347496 Macdonaldtown Gasworks	Quote number	: ----	Date received	: 20 Oct 2006
Order number	: - Not provided -			Date issued	: 30 Oct 2006
C-O-C number	: - Not provided -				
Site	: - Not provided -				
E-mail	: adam.sullivan@ch2m.com.au	E-mail	: Greg.Vogel@alsenviro.com	No. of samples	
Telephone	: 02 9950 0200	Telephone	: +61 (02) 8784 8555	Received	: 24
Facsimile	: 02 9950 0600	Facsimile	: +61 (02) 8784 8500	Analysed	: 19

This Interpretive Quality Control Report was issued on 30 Oct 2006 for the ALS work order reference ES0613192 and supersedes any previous reports with this reference.

This report contains the following information:

- 1 Analysis Holding Time Compliance
- 1 Quality Control Type Frequency Compliance
- 1 Summary of all Quality Control Outliers
- 1 Brief Method Summaries

Client : CH2M HILL PTY LTD
 Project : 347496 Macdonaldtown Gasworks

Work Order : ES0613192
 ALS Quote Reference : ----

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Interpretive Quality Control Report - Analysis Holding Time

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 preclude subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the sample aliquot was taken. Elapsed time to analysis represents time from sampling where no extraction / digestion is involved or time from extraction / digestion where this is present. For composite samples, sampling date/time is taken as that of the oldest sample contributing to that composite. Sample date/time for laboratory produced leaches are taken from the completion date/time of the leaching process. Outliers for holding time are based on USEPA SW846, APHA, AS and NEPM (1999). Failed outliers, refer to the 'Summary of Outliers'.

Matrix Type: SOIL		Analysis Holding Time and Preservation						
Method	Date Sampled	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?	
EA055-103: Moisture Content								
Soil Glass Jar - Unpreserved BH12A/6.0, BHC/6.0, BHF/8.5, TRIP BLANK 3	BHB/9.0, BHE/8.4, TRIP SPIKE,	19 Oct 2006	----	----	----	25 Oct 2006	26 Oct 2006	Pass
Soil Glass Jar - Unpreserved BHC1/8.0, BHC2/8.0, BHD/8.4, BHG/7.2, TRIP SPIKE CONTROL 3,	BHC2/6.0, BHD/7.0, BHG/6.0, BHG/8.1, DUP23	20 Oct 2006	----	----	----	25 Oct 2006	27 Oct 2006	Pass
EK026G: Total Cyanide By Discrete Analyser								
Soil Glass Jar - Unpreserved BHE/8.4,	BHF/8.5	19 Oct 2006	26 Oct 2006	26 Oct 2006	Pass	26 Oct 2006	9 Nov 2006	Pass
Soil Glass Jar - Unpreserved BHG/6.0		20 Oct 2006	26 Oct 2006	27 Oct 2006	Pass	26 Oct 2006	9 Nov 2006	Pass
EP071: TPH - Semivolatile Fraction								
Soil Glass Jar - Unpreserved BH12A/6.0, BHC/6.0, BHF/8.5, TRIP BLANK 3	BHB/9.0, BHE/8.4, TRIP SPIKE,	19 Oct 2006	25 Oct 2006	2 Nov 2006	Pass	27 Oct 2006	4 Dec 2006	Pass
Soil Glass Jar - Unpreserved BHC1/8.0, BHC2/8.0, BHD/8.4, BHG/7.2, TRIP SPIKE CONTROL 3,	BHC2/6.0, BHD/7.0, BHG/6.0, BHG/8.1, DUP23	20 Oct 2006	25 Oct 2006	3 Nov 2006	Pass	27 Oct 2006	4 Dec 2006	Pass
EP075(SIM): PAH/Phenols (SIM)								
Soil Glass Jar - Unpreserved BH12A/6.0, BHC/6.0, BHF/8.5	BHB/9.0, BHE/8.4,	19 Oct 2006	25 Oct 2006	2 Nov 2006	Pass	27 Oct 2006	4 Dec 2006	Pass

Client : CH2M HILL PTY LTD
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Matrix Type: SOIL **Analysis Holding Time and Preservation**

Method		Date Sampled	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EP075(SIM): PAH/Phenols (SIM) - continued								
Soil Glass Jar - Unpreserved		20 Oct 2006	25 Oct 2006	3 Nov 2006	Pass	27 Oct 2006	4 Dec 2006	Pass
BHC1/8.0, BHC2/8.0, BHD/8.4, BHG/7.2, DUP23								
BHC2/6.0, BHD/7.0, BHG/6.0, BHG/8.1,								
EP080: TPH Volatiles/BTEX								
Soil Glass Jar - Unpreserved		19 Oct 2006	25 Oct 2006	2 Nov 2006	Pass	25 Oct 2006	2 Nov 2006	Pass
BH12A/6.0, BHC/6.0, BHF/8.5, TRIP BLANK 3								
BHB/9.0, BHE/8.4, TRIP SPIKE,								
Soil Glass Jar - Unpreserved		20 Oct 2006	25 Oct 2006	3 Nov 2006	Pass	25 Oct 2006	3 Nov 2006	Pass
BHC1/8.0, BHC2/8.0, BHD/8.4, BHG/7.2, TRIP SPIKE CONTROL 3,								
BHC2/6.0, BHD/7.0, BHG/6.0, BHG/8.1, DUP23								

Matrix Type: WATER **Analysis Holding Time and Preservation**

Method	Date Sampled	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Pass?	Date analysed	Due for analysis	Pass?
EP071: TPH - Semivolatile Fraction							
Amber Glass Bottle - Unpreserved EQ2	18 Oct 2006	23 Oct 2006	25 Oct 2006	Pass	24 Oct 2006	3 Dec 2006	Pass
Amber Glass Bottle - Unpreserved EQ3	19 Oct 2006	23 Oct 2006	26 Oct 2006	Pass	24 Oct 2006	3 Dec 2006	Pass
EP075(SIM): PAH/Phenols (GC/MS - SIM)							
Amber Glass Bottle - Unpreserved EQ2	18 Oct 2006	23 Oct 2006	25 Oct 2006	Pass	24 Oct 2006	3 Dec 2006	Pass
Amber Glass Bottle - Unpreserved EQ3	19 Oct 2006	23 Oct 2006	26 Oct 2006	Pass	24 Oct 2006	3 Dec 2006	Pass
EP080: TPH Volatiles/BTEX							
Amber VOC Vial - HCl or NaHSO4 EQ2	18 Oct 2006	----	----	----	24 Oct 2006	1 Nov 2006	Pass
Amber VOC Vial - HCl or NaHSO4 EQ3	19 Oct 2006	----	----	----	24 Oct 2006	2 Nov 2006	Pass

Client : CH2M HILL PTY LTD
Project : 347496 Macdonaldtown Gasworks

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Interpretive Quality Control Report - Frequency of Quality Control Samples

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which this work order was processed. Actual rate should be greater than or equal to the expected rate.

Matrix Type: SOIL

Frequency of Quality Control Samples

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
EA055-103: Moisture Content	2	17	11.8	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EK026G: Total Cyanide By Discrete Analyser	1	5	20.0	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	2	19	10.5	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	2	16	12.5	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	2	20	10.0	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Laboratory Control Samples (LCS)					
EK026G: Total Cyanide By Discrete Analyser	1	5	20.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	19	5.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	16	6.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Method Blanks (MB)					
EK026G: Total Cyanide By Discrete Analyser	1	5	20.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	19	5.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	16	6.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Matrix Spikes (MS)					
EK026G: Total Cyanide By Discrete Analyser	1	5	20.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP071: TPH - Semivolatile Fraction	1	19	5.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (SIM)	1	16	6.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	20	5.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement

Matrix Type: WATER

Frequency of Quality Control Samples

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
EP080: TPH Volatiles/BTEX	2	12	16.7	10.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Laboratory Control Samples (LCS)					
EP071: TPH - Semivolatile Fraction	1	10	10.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (GC/MS - SIM)	1	17	5.9	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	12	8.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Method Blanks (MB)					
EP071: TPH - Semivolatile Fraction	1	10	10.0	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP075(SIM): PAH/Phenols (GC/MS - SIM)	1	17	5.9	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
EP080: TPH Volatiles/BTEX	1	12	8.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement
Matrix Spikes (MS)					
EP080: TPH Volatiles/BTEX	1	12	8.3	5.0	NEPM 1999 Schedule B(3) and ALSE QCS3 requirement

Client : CH2M HILL PTY LTD
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Interpretive Quality Control Report - Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged on the 'Quality Control Report'. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). Flagged outliers on control limits for inorganics tests may be within the NEPM specified data quality objective of recoveries in the range of 70 to 130%. Where this occurs, no corrective action is taken. - Anonymous - Client Sample IDs refer to samples which are not specifically part of this work order but formed part of the QC process lot.

Non-surrogates

ALS QC Lot	Matrix Type	Laboratory Sample ID	Client Sample ID	Analyte	Data	Limits	Comment
Laboratory Control Samples (LCS)							
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	WATER	324745-007	----	Pyrene	119 %	63.1-118 %	Recovery greater than upper control limit
				Benzo(b)fluoranthene	121 %	61.7-119 %	Recovery greater than upper control limit

1 For all matrices, no RPD recovery outliers occur for the duplicate analysis.

1 For all matrices, no method blank result outliers occur.

1 For all matrices, no matrix spike recoveries breaches occur.

Surrogates

ALS QC Lot	Matrix Type	Laboratory Sample ID	Client Sample ID	Analyte	Data	Limits	Comment
Surrogates							
EP080S: TPH(V)/BTEX Surrogates	SOIL	ES0613192-006	BHF/8.5	Toluene-D8	121 %	81-117 %	Recovery greater than upper data quality objective

Outliers : Analysis Holding Time

The following report highlights outliers within this 'Interpretive Quality Control Report - Analysis Holding Time'.

1 No holding time outliers occur.

Outliers : Frequency of Quality Control Samples

The following report highlights outliers within this 'Interpretive Quality Control Report - Frequency of Quality Control Samples'.

1 No frequency outliers occur.

Client : CH2M HILL PTY LTD
Project : 347496 Macdonaldtown Gasworks

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Method Reference Summary

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure 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 herein. Reference methods from which ALSE methods are based are provided in parenthesis.

Matrix Type: SOIL

Method Reference Summary

Preparation Methods

EK026PR : NaOH leach for TCN in Soils - APHA 20th ed., 4500 CN- C & N. Samples are extracted by end-over-end tumbling with NaOH.

ORG16 : Methanolic Extraction of Soils for Purge and Trap - (USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.

ORG17B : Tumbler Extraction of Solids (Option B - Non-concentrating) - In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 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.

Analytical Methods

EA055-103 : Moisture Content - A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (1999) Schedule B(3) (Method 102)

EK026G : Total Cyanide By Discrete Analyser - APHA 20th 4500 CN - C & N. Caustic leach extracts of the sample are distilled with sulphuric acid, converting all CN species to HCN. The distillates are analyzed for CN by Seal. This method is compliant with NEPM (1999) Schedule B(3) (Method 403)

EP071 : TPH - Semivolatile Fraction - (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)

EP075(SIM) : PAH/Phenols (SIM) - (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)

EP080 : TPH Volatiles/BTEX - (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)

Matrix Type: WATER

Method Reference Summary

Preparation Methods

ORG14 : Separatory Funnel Extraction of Liquids - USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Analytical Methods

EP071 : TPH - Semivolatile Fraction - USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

EP075(SIM) : PAH/Phenols (GC/MS - SIM) - USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

EP080 : TPH Volatiles/BTEX - USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)



ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive report

Client Details

Client : CH2M HILL PTY LTD
Contact : MR ADAM SULLIVAN
Address : PO BOX 5392 CHATSWOOD NSW
AUSTRALIA 1515

Project : 347496 Macdonaldtown Gasworks
Order number : - Not provided -
C-O-C Number : - Not provided -
Site : - Not provided -
Sampler : - Not provided -

E-mail : adam.sullivan@ch2m.com.au
Telephone : 02 9950 0200
Facsimile : 02 9950 0600

Laboratory Details

Laboratory : ALS Environmental Sydney
Manager : Greg Vogel
Address : 277-289 Woodpark Road Smithfield NSW
Australia 2164

Quote number : ----
Work order : ES0613192

E-mail : Greg.Vogel@alsenviro.com
Telephone : +61 (02) 8784 8555
Facsimile : +61 (02) 8784 8500

Dates

Date Samples Received : 20 Oct 2006
Scheduled Reporting Date : **30 Oct 2006**

SRA Issue Date : 23 Oct 2006
Client Requested Date : 30 Oct 2006

Delivery Details

Mode of Delivery : Carrier.
No. of coolers/boxes : 1 HARD
Security Seal : Intact.

Temperature : CHILLED - Ice present
No. of samples - Received : 24
- Analysed : 19

Comments

- 1 Samples received in appropriately pretreated and preserved containers.
 - 1 Sample(s) have been received within recommended holding times.
 - 1 Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).
-
- 1 Analytical work for this work order will be conducted at ALSE Sydney.
 - 1 Sample Disposal - Aqueous (14 days), Solid (90 days) from date of completion of work order.
 - 1 Please direct any queries related to sample condition / numbering / breakages to Nanthini Coilparampil
 - 1 Please direct any turn around / technical queries to the laboratory contact designated above.
 - 1 When the sampling time is not supplied on the COC documentation, ALSE defaults the sampling time to that of the COC 'relinquishment' time (if supplied). If this also is not supplied, ALSE defaults the sampling time to the 'time of receipt at Laboratory'.

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SAMPLE RECEIPT NOTIFICATION (SRN) - continued

Client : CH2M HILL PTY LTD
Project : 347496 Macdonaldtown Gasworks

Work Order : ES0613192
ALS Quote Reference : ----



Summary of Sample(s) / Container(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 moisture and preparation tasks, that form an implicit part of that package.

ALS Sample ID.	Client Sample ID - Sample Date	Requested Analysis									
		W-04 - WATER TPH/BTEX	W-14A - WATER PAH/Phenols (SIM)	EA055-103 - SOIL Moisture Content	EK026G (Solids) - SOIL Total Cyanide By Discrete Analyser	S-04 - SOIL TPH/BTEX	S-14A - SOIL PAH/Phenols (16 PAH - SIM)				
ES0613192-001	EQ2 - 18 Oct 2006	1	1								
ES0613192-002	BH12A/6.0 - 19 Oct 2006					1	1				
ES0613192-003	BHB/9.0 - 19 Oct 2006					1	1				
ES0613192-004	BHC/6.0 - 19 Oct 2006					1	1				
ES0613192-005	BHE/8.4 - 19 Oct 2006			1	1	1	1				
ES0613192-006	BHF/8.5 - 19 Oct 2006			1	1	1	1				
ES0613192-007	TRIP SPIKE - 19 Oct 2006					1					
ES0613192-008	TRIP BLANK 3 - 19 Oct 2006					1					
ES0613192-009	EQ3 - 19 Oct 2006	1	1								
ES0613192-010	BHC1/8.0 - 20 Oct 2006					1	1				
ES0613192-011	BHC2/6.0 - 20 Oct 2006					1	1				
ES0613192-012	BHC2/8.0 - 20 Oct 2006					1	1				
ES0613192-013	BHD/7.0 - 20 Oct 2006					1	1				
ES0613192-014	BHD/8.4 - 20 Oct 2006					1	1				
ES0613192-015	BHG/6.0 - 20 Oct 2006			1	1	1	1				
ES0613192-016	BHG/7.2 - 20 Oct 2006					1	1				
ES0613192-017	BHG/8.1 - 20 Oct 2006					1	1				
ES0613192-018	TRIP SPIKE CONTROL 3 - 20 Oct 2006					1					
ES0613192-019	BH12A/9.0 - 19 Oct 2006										
ES0613192-020	BHB/7.2 - 19 Oct 2006										
ES0613192-021	BHC/3.6 - 19 Oct 2006										
ES0613192-022	BHE/7.2 - 19 Oct 2006										
ES0613192-023	BHF/9.0 - 18 Oct 2006										
ES0613192-024	DUP23 - 20 Oct 2006					1	1				
Total(s) :		2	2	3	3	17	14				

SAMPLE RECEIPT NOTIFICATION (SRN) - continued

Client : CH2M HILL PTY LTD
Project : 347496 Macdonaldtown Gasworks

Work Order : ES0613192
ALS Quote Reference : ----



Requested Reports

1 MR ADAM SULLIVAN

- A4 - Certificate of Analysis - NEPM format	Email	adam.sullivan@ch2m.com.au
- A4 - Interpretive Quality Control Report - NEPM format	Email	adam.sullivan@ch2m.com.au
- A4 - Quality Control Report - NEPM format	Email	adam.sullivan@ch2m.com.au
- ESDAT Export Format	Email	adam.sullivan@ch2m.com.au
- ENMRG Export Format	Email	adam.sullivan@ch2m.com.au
- A4 - Sample Receipt Notification - Comprehensive format	Email	adam.sullivan@ch2m.com.au
- Chain of Custody Acknowledgement	Email	adam.sullivan@ch2m.com.au
- Invoice	Email	adam.sullivan@ch2m.com.au

Sample Container(s) / Preservation Non-Compliance Log

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

1 No sample container / preservation non-compliance exist.



CERTIFICATE OF ANALYSIS

<i>Client</i>	: CH2M HILL PTY LTD	<i>Laboratory</i>	: ALS Environmental Sydney	<i>Page</i>	: 1 of 5
<i>Contact</i>	: MR ADAM SULLIVAN	<i>Contact</i>	: Greg Vogel	<i>Work Order</i>	: ES0610884
<i>Address</i>	: PO BOX 5392 CHATSWOOD NSW AUSTRALIA 1515	<i>Address</i>	: 277-289 Woodpark Road Smithfield NSW Australia 2164		
<i>E-mail</i>	: adam.sullivan@ch2m.com.au	<i>E-mail</i>	: Greg.Vogel@alsenviro.com		
<i>Telephone</i>	: 02 9950 0200	<i>Telephone</i>	: +61 (02) 8784 8555	<i>Date received</i>	: 4 Sep 2006
<i>Facsimile</i>	: 02 9950 0600	<i>Facsimile</i>	: +61 (02) 8784 8500	<i>Date issued</i>	: 8 Sep 2006
<i>Project</i>	: Rebatch	<i>Quote number</i>	: ----	<i>No. of samples</i>	- Received : 8
<i>Order number</i>	: - Not provided -				Analysed : 8
<i>C-O-C number</i>	: - Not provided -				
<i>Site</i>	: - Not provided -				

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NATA Accredited Laboratory
825

This document is issued in
accordance with NATA's
accreditation requirements.

Accredited for compliance with
ISO/IEC 17025.

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatory</i>	<i>Position</i>	<i>Department</i>
Peter Dickenson	Senior Spectroscopist	Inorganics - NATA 825 (10911 - Sydney)
PHALAK INTAKESONE	Organics Co-ordinator	Organics - NATA 825 (10911 - Sydney)

Comments

This report for the ALSE reference ES0610884 supersedes any previous reports with this reference. Results apply to the samples as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

1 Analytical results for samples submitted

When moisture determination has been performed, results are reported on a dry weight basis. When a reported 'less than' result is higher than the LOR, this may be due to primary sample extracts/digestion dilution and/or insufficient sample amount for analysis. Surrogate Recovery Limits are static and based on USEPA SW846 or ALS-QWI/EN38 (in the absence of specified USEPA limits). Where LOR of reported result differ from standard LOR, this may be due to high moisture, reduced sample amount or matrix interference. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number, LOR = Limit of Reporting. * Indicates failed Surrogate Recoveries.

1 Surrogate control limits

The analytical procedures used by ALS Environmental are based on established internationally-recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house procedure 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 herein. Reference methods from which ALSE methods are based are provided in parenthesis.

Page Number : 3 of 5
 Client : CH2M HILL PTY LTD
 Work Order : ES0610884



Analytical Results

Client Sample ID :				MG01/1.8	MG02/1.8	TP10/2.0	TP06/0.25	MG04/0.5
Sample Matrix Type / Description :				TCLP LEACHATE	TCLP LEACHATE	TCLP LEACHATE	TCLP LEACHATE	TCLP LEACHATE
Sample Date / Time :				(6 Sep 2006)	(6 Sep 2006)	(6 Sep 2006)	(6 Sep 2006)	(6 Sep 2006)
Laboratory Sample ID :				(12:00)	(12:00)	(12:00)	(12:00)	(12:00)
Analyte	CAS number	LOR	Units	ES0610884-001	ES0610884-002	ES0610884-003	ES0610884-004	ES0610884-005
EG005C: Leachable Metals by ICPAES								
Arsenic	7440-38-2	0.1	mg/L	----	<0.1	----	----	----
Cadmium	7440-43-9	0.05	mg/L	----	<0.05	----	----	----
Lead	7439-92-1	0.1	mg/L	----	<0.1	<0.1	----	5.0
Nickel	7440-02-0	0.1	mg/L	----	<0.1	<0.1	----	<0.1
EG035C: Leachable Mercury by FIMS								
Mercury	7439-97-6	0.0010	mg/L	----	----	----	----	<0.0010
EN33: TCLP Leach								
Initial pH		0.1	pH Unit	4.8	5.7	8.9	6.7	8.8
After HCl pH		0.1	pH Unit	<0.1	1.4	1.9	1.4	1.5
Extraction Fluid Number		1	-	1	1	1	1	1
Final pH		0.1	pH Unit	4.7	4.8	5.2	4.8	5.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<1.9	<0.5	<0.5	<0.5
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	44.5	36.5	51.6	47.5	46.5
2-Chlorophenol-D4	93951-73-6	0.1	%	90.9	69.7	101	97.1	92.9
2,4,6-Tribromophenol	118-79-6	0.1	%	117	85.9	117	121	120
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	101	81.5	108	105	102
Anthracene-d10	1719-06-8	0.1	%	109	79.4	119	118	112
4-Terphenyl-d14	1718-51-0	0.1	%	118	82.4	126	125	119

Page Number : 4 of 5
 Client : CH2M HILL PTY LTD
 Work Order : ES0610884



Analytical Results

Client Sample ID :				MG06/2.0	MG10A/0.7	MG11/2.0		
Sample Matrix Type / Description :				TCLP LEACHATE	TCLP LEACHATE	TCLP LEACHATE		
Sample Date / Time :				(6 Sep 2006)	(6 Sep 2006)	(6 Sep 2006)		
Laboratory Sample ID :				(12:00)	(12:00)	(12:00)		
Analyte	CAS number	LOR	Units	ES0610884-006	ES0610884-007	ES0610884-008		
EG005C: Leachable Metals by ICPAES								
Arsenic	7440-38-2	0.1	mg/L	----	<0.1	----		
Cadmium	7440-43-9	0.05	mg/L	----	<0.05	----		
Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	<0.1		
Nickel	7440-02-0	0.1	mg/L	----	<0.1	----		
EN33: TCLP Leach								
Initial pH		0.1	pH Unit	7.4	7.1	6.1		
After HCl pH		0.1	pH Unit	1.4	1.4	1.4		
Extraction Fluid Number		1	-	1	1	1		
Final pH		0.1	pH Unit	4.8	4.8	4.8		
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5		
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	41.2	45.4	40.7		
2-Chlorophenol-D4	93951-73-6	0.1	%	81.3	92.6	82.2		
2,4,6-Tribromophenol	118-79-6	0.1	%	112	118	113		
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	96.0	103	96.3		
Anthracene-d10	1719-06-8	0.1	%	95.2	110	95.6		
4-Terphenyl-d14	1718-51-0	0.1	%	100	116	99.9		



Surrogate Control Limits

Matrix Type: SOIL - Surrogate Control Limits		Surrogate Control Limits	
Method name	Analyte name	Lower Limit	Upper Limit
EP075(SIM): PAH/Phenols (GC/MS - SIM)			
EP075(SIM)S: Phenolic Compound Surrogates	Phenol-d6	10	94
	2-Chlorophenol-D4	23	134
	2,4,6-Tribromophenol	10	123
EP075(SIM)T: PAH Surrogates	2-Fluorobiphenyl	43	116
	Anthracene-d10	27	133
	4-Terphenyl-d14	33	141

Margaret Valencic

From: Adam.Sullivan@ch2m.com.au
Sent: Monday, 4 September 2006 9:42 AM
To: Margaret Valencic
Subject: TCLP analysis

FAA
 4/9/06 2:45pm

Hi Margaret

Regarding our recent samples from the Macdonaldtown gasworks site, (Lab Quote SY/148/06), please analyse the following samples for TCLP:

Work Order	CH2M HILL Sample ID	TCLP Analysis Required
ES0609995 <i>551-653</i>	MG01/1.8 ⁴ (1)	B(a)P
ES0610062 <i>5661, 5667-670</i>	MG02/1.8 ₂ (2)	B(a)P and metals (As, Cd, Pb, Ni)
	TP10/2.0 ₃₇ (3)	B(a)P and metals (Pb, Ni)
	TP06/0.25 ₁₉ (4)	B(a)P
ES0610135 <i>5701-703</i>	MG04/0.5 ₂₃ (5)	B(a)P and metals (Pb, Hg, Ni)
	MG06/2.0 ₃₃ (6)	B(a)P and metals (Pb)
	MG10A/0.7 ₂₀ (7)	B(a)P and metals (As, Cd, Pb, Ni)
ES0610221 <i>5704-5710</i>	MG11/2.0 ₁₆ (8)	B(a)P and metals (Pb)

I request results by Friday afternoon, so please indicate if this is possible.

Regards

Adam Sullivan

Project Manager

CH2M HILL Australia Pty Ltd
 PO Box 5392
 Chatswood NSW 1515
 Ph: +61 2 9950 0221
 Mob: 0400 500 264
 Fax: +61 2 9950 0600

 This e-mail has been swept by mimesweeper
 through the ALS North America gateway.

ALS Environmental
 Sydney
 Work Order
ES0610884



Telephone : + 61 (02) 8784 8555



QUALITY CONTROL REPORT

Client	: CH2M HILL PTY LTD	Laboratory	: ALS Environmental Sydney	Page	: 1 of 4
Contact	: MR ADAM SULLIVAN	Contact	: Greg Vogel		
Address	: PO BOX 5392 CHATSWOOD NSW AUSTRALIA 1515	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164	Work order	: ES0610884
				Amendment No.	:
Project	: Rebatch	Quote number	: ----	Date received	: 4 Sep 2006
Order number	: - Not provided -			Date issued	: 8 Sep 2006
C-O-C number	: - Not provided -				
Site	: - Not provided -				
E-mail	: adam.sullivan@ch2m.com.au	E-mail	: Greg.Vogel@alsenviro.com	No. of samples	
Telephone	: 02 9950 0200	Telephone	: +61 (02) 8784 8555	Received	: 8
Facsimile	: 02 9950 0600	Facsimile	: +61 (02) 8784 8500	Analysed	: 8

This final report for the ALSE work order reference ES0610884 supersedes any previous reports with this reference.

Results apply to the samples as submitted. All pages of this report have been checked and approved for release.

This report contains the following information:

- 1 Laboratory Duplicates (DUP); Relative Percentage Difference (RPD) and Acceptance Limits
- 1 Method Blank (MB) and Laboratory Control Samples (LCS); Recovery and Acceptance Limits
- 1 Matrix Spikes (MS); Recovery and Acceptance Limits

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This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IEC 17025

This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory

Peter Dickenson
PHALAK INTAKESONE

Department

Inorganics - NATA 825 (10911 - Sydney)
Organics - NATA 825 (10911 - Sydney)