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 Work Order : ES0818838
 Client : C M JEWELL & ASSOC PTY LTD
 Project : J1418

Matrix: WATER

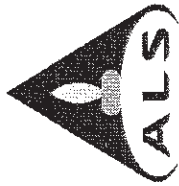
Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EK055G: Ammonia as N by Discrete Analyser						
Clear Plastic Bottle - Natural						
GW:1, GW:3, GW:4, GW:2, GW:D, BH01	—	—	—	22-DEC-2008	20-DEC-2008	2
EK053G: NOx as N by Discrete Analyser						
Clear Plastic Bottle - Natural						
GW:1, GW:3, GW:4, GW:2, GW:D, BH01	—	—	—	22-DEC-2008	21-DEC-2008	1

Outliers : Frequency of Quality Control Samples

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

Matrix: WATER

Quality Control Sample Type Method	Count		Rate (%)		Quality Control Specification	
	QC	Regular	Actual	Expected		
Laboratory Duplicates (DUP)	1	20	5.0	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Major Cations - Filtered						



Environmental Division

QUALITY CONTROL REPORT

Work Order	: ES0819019	Page	: 1 of 5
Client	: C M JEWELL & ASSOC PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR CRAIG WICENCIAK	Contact	: Charlie Pierce
Address	: P O BOX 10 WENTWORTH FALLS NSW, AUSTRALIA 2782	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: craig@cm-jewell.com.au	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 47593251	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 47593257	Facsimile	: +61-2-8784 8500
Project	: J141B	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: KIRRAWEE BRICK PIT	Date Samples Received	: 24-DEC-2008
C-O-C number	: —	Issue Date	: 08-JAN-2009
Sampler	: CW, DE	No. of samples received	: 16
Order number	: SY/100/08	No. of samples analysed	: 16
Quote number	: SY/100/08		

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

This Quality Control Report contains the following information:

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



NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Kim McCabe	Senior Inorganic Chemist	Stafford Minerals - AY
Stephen Hislop	Senior Inorganic Chemist	Inorganics

Environmental Division Sydney

Part of the **ALS Laboratory Group**

277-289 Woodpark Road Smithfield NSW Australia 2164

Tel. +61-2-8784 8555 Fax. +61-2-8784 8500 www.alsglobal.com

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Page : 2 of 5
Work Order : ES0819019
Client : C M JEWELL & ASSOC PTY LTD
Project : J141B

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 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 = Chemistry Abstract Services number

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC



Page : 3 of 5
Work Order : ES0819019
Client : C M JEWELL & ASSOC PTY LTD
Project : J141B

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 QWL-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

Sub-Matrix: SOIL

Laboratory sample ID		Client sample ID	Method: Compounding	CAS Number		LOR	Unit	Laboratory Duplicate (DUP) Report		RPD (%)	Recovery Limits (%)
								Original Result	Duplicate Result		
EP005: Total Organic Carbon (TOC) (QC Lot: 856538)											
ES0819019-001		BP-01:0.05	EP005: Total Organic Carbon	---		0.02	%	11.0	10.4	5.5	0% - 20%
ES0819019-011		BP-06:0.05	EP005: Total Organic Carbon	---		0.02	%	1.05	1.09	3.7	0% - 20%



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Work Order : ES0819019
Client : C M JEWELL & ASSOC PTY LTD
Project : J141B

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

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

Sub-Matrix: SOIL

Method Blank (MB) Report				Laboratory Control Spike (LCS) Report			
Result		Spike Concentration		Spike Recovery (%)		Recovery Limits (%)	
Unit		LOR		CAS Number		Low	
EP005: Total Organic Carbon (TOC) (QC Lot: 856535)		0.02		—		70	
EP005: Total Organic Carbon		%		100 %		130	
<0.02				99.0			

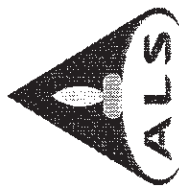


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Work Order : ES0819019
Client : C M JEWELL & ASSOC PTY LTD
Project : J141B

Matrix Spike (MS) Report

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

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



Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES0819019	Page	: 1 of 5
Client	: C M JEWELL & ASSOC PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR CRAIG WICENCIAK	Contact	: Charlie Pierce
Address	: P O BOX 10 WENTWORTH FALLS NSW, AUSTRALIA 2782	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: craig@cm-jewell.com.au	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 47593251	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 47593257	Facsimile	: +61-2-8784 8500
Project	: J141B	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: KIRRAWEE BRICK PIT	Date Samples Received	: 24-DEC-2008
C-O-C number	: —	Issue Date	: 08-JAN-2009
Sampler	: CW, DE	No. of samples received	: 16
Order number	: SY1100/08	No. of samples analysed	: 16
Quote number	: SY1100/08		

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



Page : 2 of 5
 Work Order : ES0819019
 Client : C M JEWELL & ASSOC PTY LTD
 Project : J141B

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	
		Date extracted	Due for extraction	Date analysed	Due for analysis
EP005: Total Organic Carbon (TOC)					
Soil Glass Jar - Unpreserved					
BP:01:0.05,	24-DEC-2008	07-JAN-2009	21-JAN-2009	07-JAN-2009	21-JAN-2009
BP:02:0.15,					
BP:03:0.15,					
BP:04:0.15,					
BP:05:0.15,					
BP:06:0.15,					
BP:07:0.15,					
BP:SD1,					
BP:SD2					



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Work Order : ES0819019
Client : C M JEWELL & ASSOC PTY LTD
Project : J141B

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Matrix: SOIL		Quality Control Sample Type		Count		Rate (%)		Quality Control Specification	
		Method	QC	Regular	Actual	Expected	Evaluation		
Analytical Methods									
Laboratory Duplicates (DUP)									
Total Organic Carbon	EP005	2	16	12.5	10.0	✓		NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Laboratory Control Samples (LCS)									
Total Organic Carbon	EP005	1	16	6.3	5.0	✓		NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Method Blanks (MB)									
total Organic Carbon	EP005	1	16	6.3	5.0	✓		NEPM 1999 Schedule B(3) and ALS QCS3 requirement	



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Work Order : ES0819019
Client : C M JEWELL & ASSOC PTY LTD
Project : J141B

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
Total Organic Carbon	EP005	SOIL	In-house. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a LECO furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO ₂) is automatically measured by infra-red detector.



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Work Order : ES0819019
Client : C M JEWELL & ASSOC PTY LTD
Project : J141B

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-QW/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

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

Regular Sample Surrogates

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

Outliers : Analysis Holding Time Compliance

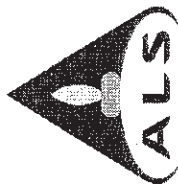
This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

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

- No Quality Control Sample Frequency Outliers exist.



Environmental Division

QUALITY CONTROL REPORT

Work Order	: ES0818896	Page	: 1 of 8
Client	: C M JEWELL & ASSOC PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR CRAIG WICENCIAK	Contact	: Charlie Pierce
Address	: P O BOX 10 WENTWORTH FALLS NSW, AUSTRALIA 2782	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: craig@cm-jewell.com.au	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 47593251	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 47593257	Facsimile	: +61-2-8784 8500
Project	: J1418	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: KIRRAWEE BRICK PIT	Date Samples Received	: 22-DEC-2008
C-O-C number	: —	Issue Date	: 06-JAN-2009
Sampler	: DVE/CBW	No. of samples received	: 16
Order number	: —	No. of samples analysed	: 16
Quote number	: SY100/08		

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

This Quality Control Report contains the following information:

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



NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

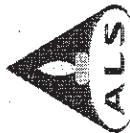
WORLD RECOGNISED
ACCREDITATION

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
Edwandy Fadjar	Senior Organic Chemist	Inorganics
Nanthini Coilparampil	Senior Inorganic Chemist	Organics
Sarah Millington	Senior Inorganic Chemist	Inorganics



Page : 2 of 8
Work Order : ES0818896
Client : C M JEWELL & ASSOC PTY LTD
Project : J1418

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 = Chemistry Abstract Services number

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC



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Work Order : ES0818896
Client : C M JEWELL & ASSOC PTY LTD
Project : J1418

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 QWL-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: WATER

Sub-Matrix: WATER		Laboratory sample ID		Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED037P: Alkalinity by PC Titration (QC Lot: 852600)												
ES0818867-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit			
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit			
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	<1	0.0	No Limit			
		ED037-P: Total Alkalinity as CaCO3	—	1	mg/L	<1	<1	0.0	No Limit			
ES0818867-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit			
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit			
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	<1	0.0	No Limit			
		ED037-P: Total Alkalinity as CaCO3	—	1	mg/L	<1	<1	0.0	No Limit			
ED037P: Alkalinity by PC Titration (QC Lot: 852603)												
ES0818896-005	BP:03.2.5	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit			
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	8	157	No Limit			
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	250	224	10.7	0% - 20%			
		ED037-P: Total Alkalinity as CaCO3	—	1	mg/L	250	233	7.1	0% - 20%			
ES0818896-014	BP:07.4.0	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit			
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	18	20	11.4	0% - 20%			
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	248	215	14.0	0% - 20%			
		ED037-P: Total Alkalinity as CaCO3	—	1	mg/L	266	236	12.0	0% - 20%			
ED041: Sulfate (Turbidimetric) as SO4 2- (QC Lot: 852840)												
ES0818896-001	BP:01.1.5	ED041: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	0.0	No Limit			
ES0818896-010	BP:05.6.0	ED041: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<10	<10	0.0	No Limit			
ED045G: Chloride Discrete analyser (QC Lot: 851366)												
ES0818896-001	BP:01.1.5	ED045G: Chloride	16887-00-6	1	mg/L	189	184	3.0	0% - 20%			
ES0818896-010	BP:05.6.0	ED045G: Chloride	16887-00-6	1	mg/L	190	184	3.7	0% - 20%			
ED093F: Dissolved Major Cations (QC Lot: 852106)												
ES0818843-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	9	9	0.0	No Limit			
		ED093F: Magnesium	7439-95-4	1	mg/L	6	7	0.0	No Limit			
		ED093F: Sodium	7440-23-5	1	mg/L	19	18	0.0	0% - 50%			
		ED093F: Potassium	7440-09-7	1	mg/L	2	2	0.0	No Limit			
ES0818843-007	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	9	9	0.0	No Limit			
		ED093F: Magnesium	7439-95-4	1	mg/L	7	6	0.0	No Limit			
		ED093F: Sodium	7440-23-5	1	mg/L	18	18	0.0	0% - 50%			
		ED093F: Potassium	7440-09-7	1	mg/L	2	2	0.0	No Limit			
ED093F: Dissolved Major Cations (QC Lot: 852108)												
ES0818896-012	BP:06.2.0	ED093F: Calcium	7440-70-2	1	mg/L	27	27	0.0	0% - 20%			
		ED093F: Magnesium	7439-95-4	1	mg/L	33	33	0.0	0% - 20%			



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Work Order : ES0818896
Client : C.M.JEWELL & ASSOC PTY LTD
Project : J1418

Sub-Matrix: WATER		Laboratory Duplicate (DUP) Report								
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
ED093F: Dissolved Major Cations (QC Lot: 852108) - continued										
ES0818896-012	BP:06; 2.0	ED093F: Sodium	7440-23-5	1	mg/L	115	115	0.0	0% - 20%	
		ED093F: Potassium	7440-09-7	1	mg/L	27	27	0.0	0% - 20%	
EG020F: Dissolved Metals by ICP-MS (QC Lot: 852146)										
ES0818896-001	BP:01;1.5	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit	
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit	
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit	
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit	
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit	
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.002	0.002	0.0	No Limit	
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit	
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit	
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit	
		EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit	
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit	
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit	
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit	
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit	
ES0818896-011	BP:06;0.5	EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.002	0.002	0.0	No Limit	
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit	
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit	
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.0	No Limit	
EG035F: Dissolved Mercury by FIMS (QC Lot: 851274)										
ES0818809-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit	
ES0818896-003	BP:02;1.5	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit	
EG035F: Dissolved Mercury by FIMS (QC Lot: 853028)										
EP0807196-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit	
ES0818903-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit	
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 851370)										
ES0818896-001	BP:01;1.5	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	0.0	No Limit	
ES0818896-010	BP:05; 6.0	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.70	0.70	0.0	0% - 20%	
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 851386)										
ES0818896-013	BP:07; 1.0	EK057G: Nitrite as N	—	0.01	mg/L	<0.01	<0.01	0.0	No Limit	
ES0818896-002	BP:01;3.5	EK057G: Nitrite as N	—	0.01	mg/L	<0.01	<0.01	0.0	No Limit	
EK059G: NOx as N by Discrete Analyser (QC Lot: 851365)										
ES0818896-001	BP:01;1.5	EK059G: Nitrite + Nitrate as N	—	0.01	mg/L	0.01	<0.01	0.0	No Limit	
ES0818896-010	BP:05; 6.0	EK059G: Nitrite + Nitrate as N	—	0.01	mg/L	<0.01	<0.01	0.0	No Limit	
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 852468)										
ES0818827-003	Anonymous	EK067G: Total Phosphorus as P	—	0.01	mg/L	<0.01	0.02	71.0	No Limit	
ES0818896-004	BP:02;3.5	EK067G: Total Phosphorus as P	—	0.01	mg/L	0.01	<0.01	0.0	No Limit	



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Work Order : ES0818896
Client : C M JEWELL & ASSOC PTY LTD
Project : J1418

Sub-Matrix: WATER		Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 852469)									
ES0818896-015	BP-D1	EK067G: Total Phosphorus as P	—	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES0818942-001	Anonymous	EK067G: Total Phosphorus as P	—	0.01	mg/L	0.35	0.32	10.5	0% - 20%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 851389)									
ES0818896-001	BP-01:1.5	EK071G: Reactive Phosphorus as P	—	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES0818896-010	BP-05: 6.0	EK071G: Reactive Phosphorus as P	—	0.01	mg/L	0.02	0.02	0.0	No Limit
EP002: Dissolved Organic Carbon (DOC) (QC Lot: 853007)									
EP0807200-002	Anonymous	EP002: Dissolved Organic Carbon	—	1	mg/L	122	124	1.3	0% - 20%
ES0818896-007	BP-04:2.5	EP002: Dissolved Organic Carbon	—	1	mg/L	7	7	0.0	No Limit
EP030: Biochemical Oxygen Demand (BOD) (QC Lot: 851439)									
EB0817996-001	Anonymous	EP030: Biochemical Oxygen Demand	—	2	mg/L	<2	<2	0.0	No Limit
EP030: Biochemical Oxygen Demand (BOD) (QC Lot: 851441)									
ES0818896-003	BP-02:1.5	EP030: Biochemical Oxygen Demand	—	2	mg/L	3	5	50.0	No Limit
ES0818896-013	BP-07: 1.0	EP030: Biochemical Oxygen Demand	—	2	mg/L	3	4	28.6	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 851351)									
ES0818896-001	BP-01:1.5	EP080: C6 - C9 Fraction	—	20	µg/L	<20	<20	0.0	No Limit
ES0818896-009	BP-05: 2.5	EP080: C6 - C9 Fraction	—	20	µg/L	<20	<20	0.0	No Limit



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Client : C M JEWELL & ASSOC PTY LTD
Project : J1418

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

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

Sub-Matrix: WATER

Method/Compound	CAS Number	LOR	Unit	Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
ED037P: Alkalinity by PC Titrator (QCLot: 852600)								
ED037P: Total Alkalinity as CaCO ₃	---	1	mg/L	---	200 mg/L	105	80.2	108
ED037P: Alkalinity by PC Titrator (QCLot: 852603)								
ED037P: Total Alkalinity as CaCO ₃	---	1	mg/L	---	200 mg/L	91.0	80.2	108
ED041: Sulfate (Turbidimetric) as SO ₄ 2- (QCLot: 852840)								
ED041: Sulfate as SO ₄ - Turbidimetric	14808-79-8	1	mg/L	<1	20 mg/L	99.1	76.1	126
ED045G: Chloride Discrete analyser (QCLot: 851366)								
ED045G: Chloride	16887-00-8	1	mg/L	<1	50 mg/L	100	83.7	124
ED093F: Dissolved Major Cations (QCLot: 852106)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	106	82.9	121
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	106	82.7	114
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	98.5	77.4	113
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	101	84.3	118
ED093F: Dissolved Major Cations (QCLot: 852108)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	96.3	82.9	121
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	98.6	82.7	114
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	95.8	77.4	113
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	101	84.3	118
EG020F: Dissolved Metals by ICP-MS (QCLot: 852146)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	96.4	79.2	117
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	96.4	85.1	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	100	87	117
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	97.8	80.6	115
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.3	84.1	114
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	98.5	84	116
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.8	83	115
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	96.0	81.1	115
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	95.1	79.2	116
EG035F: Dissolved Mercury by FIMS (QCLot: 851274)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	99.8	80.3	122
EG035F: Dissolved Mercury by FIMS (QCLot: 853028)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	100	80.3	122
EK055G: Ammonia as N by Discrete Analyser (QCLot: 851370)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1.00 mg/L	101	79.6	122



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Client : C M JEWELL & ASSOC PTY LTD
Project : J1418

Sub-Matrix: WATER

Sub-Matrix: WATER				Method Blank (µB) Report		Laboratory Control Spike (LCS) Report			
Method: Compound		CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)	Low	High
EK057G:	Nitrite as N by Discrete Analyser (QCLot: 851386)	---	0.01	mg/L	<0.01	0.96 mg/L	82.9	65.1	129
EK057G:	Nitrite as N								
EK059G:	NOx as N by Discrete Analyser (QCLot: 851385)	---	0.01	mg/L	<0.01	0.96 mg/L	99.0	76.9	122
EK059G:	Nitrite + Nitrate as N								
EK067G:	Total Phosphorus as P by Discrete Analyser (QCLot: 852468)	---	0.01	mg/L	<0.01	4.42 mg/L	84.9	64.3	120
EK067G:	Total Phosphorus as P								
EK067G:	Total Phosphorus as P by Discrete Analyser (QCLot: 852469)	---	0.01	mg/L	<0.01	4.42 mg/L	98.0	64.3	120
EK067G:	Total Phosphorus as P								
EK071G:	Reactive Phosphorus as P by discrete analyser (QCLot: 851389)	---	0.01	mg/L	<0.01	0.50 mg/L	101	83.8	122
EK071G:	Reactive Phosphorus as P								
EP002:	Dissolved Organic Carbon (DOC) (QCLot: 853007)	---	1	mg/L	<1	10 mg/L	91.8	90.8	121
EP002:	Dissolved Organic Carbon								
EP020:	Oil and Grease (O&G) (QCLot: 854511)	---	5	mg/L	<5	5000 mg/L	99.4	81.6	107
EP020:	Oil & Grease								
EP030:	Biochemical Oxygen Demand (BOD) (QCLot: 851439)	---	2	mg/L	<2	200 mg/L	106	66.8	112
EP030:	Biochemical Oxygen Demand								
EP030:	Biochemical Oxygen Demand (BOD) (QCLot: 851441)	---	2	mg/L	<2	200 mg/L	104	66.8	112
EP030:	Biochemical Oxygen Demand								
EP080/071:	Total Petroleum Hydrocarbons (QCLot: 851351)	---	20	µg/L	<20	260 µg/L	85.3	75	127
EP080:	C6 - C9 Fraction								
EP080/071:	Total Petroleum Hydrocarbons (QCLot: 854222)	---	50	µg/L	<50	200 µg/L	94.0	58.9	131
EP071:	C10 - C14 Fraction	---	100	µg/L	<100	200 µg/L	102	73.9	138
EP071:	C15 - C28 Fraction	---	50	µg/L	<50	200 µg/L	86.0	62.7	131
EP071:	C29 - C36 Fraction								



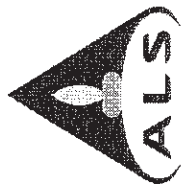
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Work Order : ES0818896
Client : C.M. JEWELL & ASSOC PTY LTD
Project : J1418

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: WATER

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%) Low	High
ED045G: Chloride Discrete analyser (QCLot: 851366)							
ES0818896-001	BP-01:1.5	ED045G: Chloride	16987-00-6	250 mg/L	94.3	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 852146)							
ES0818896-001	BP-01:1.5	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	102	70	130
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	97.5	70	130
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	100	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	98.8	70	130
		EG020A-F: Lead	7439-92-1	0.2 mg/L	93.3	70	130
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	97.4	70	130
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	100	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	103	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 851274)							
ES0818896-002	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	88.0	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 853028)							
EP0807196-001	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	87.7	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 851370)							
ES0818896-001	BP-01:1.5	EK055G: Ammonia as N	7664-41-7	.50 mg/L	90.6	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 851386)							
ES0818896-013	BP-07: 1.0	EK057G: Nitrite as N	---	0.60 mg/L	128	70	130
EK059G: NOX as N by Discrete Analyser (QCLot: 851365)							
ES0818896-001	BP-01:1.5	EK059G: Nitrite + Nitrate as N	---	0.60 mg/L	93.0	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 852468)							
ES0818896-003	Anonymous	EK067G: Total Phosphorus as P	---	1.00 mg/L	87.1	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 852469)							
ES0818896-015	BP-D1	EK067G: Total Phosphorus as P	---	1.00 mg/L	91.3	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 851389)							
ES0818896-001	BP-01:1.5	EK071G: Reactive Phosphorus as P	---	0.50 mg/L	91.8	70	130
EP002: Dissolved Organic Carbon (DOC) (QCLot: 853007)							
EP0807200-003	Anonymous	EP002: Dissolved Organic Carbon	---	1000 mg/L	95.6	70	130
EP0807074: Total Petroleum Hydrocarbons (QCLot: 851351)							
ES0818896-001	BP-01:1.5	EP080: C6 - C9 Fraction	---	250 µg/L	93.9	70	130



Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES0818896	Page	: 1 of 11
Client	: C M JEWELL & ASSOC PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR CRAIG WICENCIAK	Contact	: Charlie Pierce
Address	: P O BOX 10	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
	WENTWORTH FALLS NSW, AUSTRALIA 2782		
E-mail	: craig@cm-jewell.com.au	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 47593251	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 47593257	Facsimile	: +61-2-8784 8500
Project	: J1418	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: KIRRAWEE BRICK PIT	Date Samples Received	: 22-DEC-2008
C-O-C number	: —	Issue Date	: 06-JAN-2009
Sampler	: DVE/CBW	No. of samples received	: 16
Order number	: —	No. of samples analysed	: 16
Quote number	: SY/100/08		

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



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 Work Order : ES0818896
 Client : C M JEWELL & ASSOC PTY LTD
 Project : J1418

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: WATER							
Method		Sample Date	Extraction / Preparation		Analysis		Evaluation
Container / Client Sample ID(s)			Date extracted	Due for extraction	Date analysed	Due for analysis	
ED037P- Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural							
BP-01:1.5,	20-DEC-2008	—	—	—	29-DEC-2008	03-JAN-2009	✓
BP-02:3.5,							
BP-03: 5.5,							
BP-04: 6.0,							
BP-05: 6.0,							
BP-06: 2.0,							
BP-07: 4.0,							
BP-D2							
ED041: Sulfate (Turbidimetric) as SO4 2-							
Clear Plastic Bottle - Natural							
BP-01:1.5,	20-DEC-2008	—	—	—	29-DEC-2008	17-JAN-2009	✓
BP-02:3.5,							
BP-03: 5.5,							
BP-04: 6.0,							
BP-05: 6.0,							
BP-06: 2.0,							
BP-07: 4.0,							
BP-D1							
ED045G- Chloride-Discrete analyser							
Clear Plastic Bottle - Natural							
BP-01:1.5,	20-DEC-2008	—	—	—	23-DEC-2008	17-JAN-2009	✓
BP-02:1.5,							
BP-03:2.5,							
BP-04:2.5,							
BP-05: 2.5,							
BP-06:0.5,							
BP-07: 1.0,							
BP-D1							



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 Client : C M JEWELL & ASSOC PTY LTD
 Project : J1418

Matrix: WATER		Evaluation: x = Holding time breach ; ✓ = Within holding time.			
Method	Sample Date	Extraction / Preparation		Analysis	
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Due for analysis
ED093F: Dissolved Major Cations					
Clear Plastic Bottle - Natural					
BP-01; 3.5, BP-02; 3.5, BP-03; 5.5, BP-04; 6.0, BP-05; 6.0, BP-06; 2.0, BP-07; 4.0, BP-D1, BP-D2	20-DEC-2008	---	---	---	17-JAN-2009
EG020F: Dissolved Metals by ICP-MS					
Clear Plastic Bottle - Nitric Acid; Filtered					
BP-01; 3.5, BP-02; 3.5, BP-03; 5.5, BP-04; 6.0, BP-05; 6.0, BP-06; 2.0, BP-07; 4.0, BP-D1, BP-D2	20-DEC-2008	---	---	---	18-JUN-2009
EG035F: Dissolved Mercury by FIMS					
Clear Plastic Bottle - Nitric Acid; Filtered					
BP-01; 3.5, BP-02; 3.5, BP-03; 5.5, BP-04; 6.0, BP-05; 6.0, BP-06; 0.5	20-DEC-2008	---	---	---	17-JAN-2009
Clear Plastic Bottle - Nitric Acid; Filtered					
BP-06; 2.0, BP-07; 4.0, BP-D1, BP-D2	20-DEC-2008	---	---	---	17-JAN-2009
EK055G: Ammonia as N by Discrete Analyser					
Clear Plastic Bottle - Sulphuric Acid					
BP-01; 3.5, BP-02; 3.5, BP-03; 5.5, BP-04; 6.0, BP-05; 6.0, BP-06; 2.0, BP-07; 4.0, BP-D1, BP-D2	20-DEC-2008	---	---	---	17-JAN-2009



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 Work Order : ES0818996
 Client : C M JEWELL & ASSOC PTY LTD
 Project : J1418

Matrix: WATER		Evaluation: * = Holding time breach ; ✓ = Within holding time.			
Method	Sample Date	Extraction / Preparation		Analysis	
Container / Client Sample ID(s)		Date extracted	Due for extraction	Date analysed	Due for analysis
EK057G: Nitrate as N by Discrete Analyser					
Clear Plastic Bottle - Natural	20-DEC-2008	---	---	22-DEC-2008	22-DEC-2008
BP:01; 3.5, BP:02; 3.5, BP:03; 5.5, BP:04; 6.0, BP:05; 2.5, BP:06; 2.0, BP:07; 4.0, BP:D1, BP:D2					✓
EK059G: NOX as N by Discrete Analyser					
Clear Plastic Bottle - Sulphuric Acid	20-DEC-2008	---	---	23-DEC-2008	17-JAN-2009
BP:01; 3.5, BP:02; 3.5, BP:03; 5.5, BP:04; 6.0, BP:05; 2.5, BP:06; 0.5, BP:07; 1.0, BP:D1, BP:D2					✓
EK067G: Total Phosphorus as P by Discrete Analyser					
Clear Plastic Bottle - Sulphuric Acid	20-DEC-2008	24-DEC-2008	17-JAN-2009	24-DEC-2008	17-JAN-2009
BP:01; 3.5, BP:02; 3.5, BP:03; 5.5, BP:04; 6.0, BP:05; 2.5, BP:06; 0.5, BP:07; 1.0, BP:D1, BP:D2				✓	✓
EK071G: Reactive Phosphorus as P by discrete analyser					
Clear Plastic Bottle - Natural	20-DEC-2008	---	---	22-DEC-2008	22-DEC-2008
BP:01; 3.5, BP:02; 3.5, BP:03; 5.5, BP:04; 6.0, BP:05; 2.5, BP:06; 0.5, BP:07; 1.0, BP:D1, BP:D2				---	✓



Matrix: WATER		Evaluation: x = Holding time breach; ✓ = Within holding time.			
Method	Sample Date	Extraction / Preparation		Analysis	
Container / Client Sample ID(s)		Date extracted	Due for extraction	Date analysed	Due for analysis
EP002: Dissolved Organic Carbon (DOC)					
DOC filtered- sulphuric preserved					
BP:01; 1.5, BP:02; 1.5, BP:03; 2.5, BP:04; 2.5, BP:05; 2.5, BP:06; 0.5, BP:07; 1.0, BP:D1	20-DEC-2008	---	---	29-DEC-2008	17-JAN-2009
				---	✓
EP020: Oil and Grease (O&G)					
Amber Glass Bottle - Sulphuric Acid					
BP:01; 1.5, BP:02; 1.5, BP:03; 2.5, BP:04; 2.5, BP:05; 2.5, BP:06; 0.5, BP:07; 1.0, BP:D1	20-DEC-2008	---	---	31-DEC-2008	17-JAN-2009
				---	✓
EP030: Biochemical Oxygen Demand (BOD)					
Clear Plastic Bottle - Natural					
BP:01; 1.5, BP:02; 1.5, BP:03; 2.5, BP:04; 2.5, BP:05; 2.5, BP:06; 0.5, BP:07; 1.0, BP:D1	20-DEC-2008	---	---	22-DEC-2008	22-DEC-2008
				---	✓

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 Client : C M JEWELL & ASSOC PTY LTD
 Project : J1418



Matrix: WATER		Evaluation: * = Holding time breach ; ✓ = Within holding time.				
Method	Sample Date	Extraction / Preparation		Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Due for analysis	
EP080.071: Total Petroleum Hydrocarbons						
Amber Glass Bottle - Unpreserved						
BP-01:3.5,	20-DEC-2008	24-DEC-2008	27-DEC-2008	✓	09-FEB-2009	
BP-02:1.5,						
BP-03:5.5,						
BP-04:6.0,						
BP-05:6.0,						
BP-06:2.0,						
BP-07:4.0,						
BP-D1,						
Amber VOC Vial - HCl or NaHSO4						
BP-01:3.5,	20-DEC-2008	—	—	—	03-JAN-2009	
BP-02:3.5,						
BP-03:5.5,						
BP-04:6.0,						
BP-05:6.0,						
BP-06:2.0,						
BP-07:4.0,						
BP-D1,						



Page : 7 of 11
 Work Order : ES0818896
 Client : C M JEWELL & ASSOC PTY LTD
 Project : J1418

Quality Control Parameter Frequency Compliance

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

Matrix: WATER

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

Quality Control Sample Type		Method	Count		Rate (%)		Evaluation	Quality Control Specification
Analytical Methods			QC	Regular	Actual	Expected		
Laboratory Duplicates (DUP)								
Matrix: WATER	Alkalinity by PC Titrator	ED037-P	4	40	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	Ammonia as N by Discrete analyser	EK055G	2	17	11.8	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	Biochemical Oxygen Demand (BOD)	EP030	3	19	15.8	13.3	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	Chloride by Discrete Analyser	ED045G	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	Dissolved Mercury by FIMS	EG035F	4	40	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	Dissolved Organic Carbon	EP002	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	Major Cations - Filtered	ED093F	3	26	11.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	19	10.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
	Nitrite as N by Discrete Analyser	EK057G	2	16	12.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Reactive Phosphorus as P-By Discrete Analyser	EK071G	2	16	12.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Sulfate (Turbidimetric) as SO4 2-	ED041	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Total Phosphorus as P By Discrete Analyser	EK067G	4	34	11.3	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Laboratory Control Samples (LCS)								
Alkalinity by PC Titrator	ED037-P	2	40	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Ammonia as N by Discrete analyser	EK055G	1	17	5.9	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Biochemical Oxygen Demand (BOD)	EP030	2	19	10.5	6.7	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Chloride by Discrete Analyser	ED045G	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Dissolved Mercury by FIMS	EG035F	2	40	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Dissolved Organic Carbon	EP002	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Major Cations - Filtered	ED093F	2	26	7.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Nitrite as N by Discrete Analyser	EK057G	1	16	6.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Oil and Grease	EP020	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Reactive Phosphorus as P-By Discrete Analyser	EK071G	1	16	6.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Sulfate (Turbidimetric) as SO4 2-	ED041	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Total Phosphorus as P By Discrete Analyser	EK067G	2	34	5.9	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
TPH - Semivolatile Fraction	EP071	1	16	6.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Method Blanks (MB)								
Ammonia as N by Discrete analyser	EK055G	1	17	5.9	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Biochemical Oxygen Demand (BOD)	EP030	2	19	10.5	6.7	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Chloride by Discrete Analyser	ED045G	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	



Page : 8 of 11
 Work Order : ES0818896
 Client : C M JEWELL & ASSOC PTY LTD
 Project : J1418

Matrix: WATER							Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification		
Quality Control Sample Type		Method	Count			Quality Control Specification			
Analytical Methods			QC	Regular	Actual	Expected	Evaluation		
Method Blanks (MB) - Continued									
Dissolved Mercury by FIMS	EG035F		2	40	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Dissolved Metals by ICP-MS - Suite A	EG020A-F		1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Dissolved Organic Carbon	EP002		1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Major Cations - Filtered	ED093F		2	26	7.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G		1	19	5.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Nitrite as N by Discrete Analyser	EK057G		1	16	6.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Oil and Grease	EP020		1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Reactive Phosphorus as P-By Discrete Analyser	EK071G		1	16	6.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Sulfate (Turbidimetric) as SO4 2-	ED041		1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Total Phosphorus as P By Discrete Analyser	EK067G		2	34	5.9	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
TPH - Semivolatile Fraction	EP071		1	16	6.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
TPH Volatiles/BTEX	EP080		1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Matrix Spikes (MS)									
Ammonia as N by Discrete analyser	EK055G		1	17	5.9	5.0	✓	ALS QCS3 requirement	
Chloride by Discrete Analyser	ED045G		1	20	5.0	5.0	✓	ALS QCS3 requirement	
Dissolved Mercury by FIMS	EG035F		2	40	5.0	5.0	✓	ALS QCS3 requirement	
Dissolved Metals by ICP-MS - Suite A	EG020A-F		1	20	5.0	5.0	✓	ALS QCS3 requirement	
Dissolved Organic Carbon	EP002		1	20	5.0	5.0	✓	ALS QCS3 requirement	
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G		1	19	5.3	5.0	✓	ALS QCS3 requirement	
Nitrite as N by Discrete Analyser	EK057G		1	16	6.3	5.0	✓	ALS QCS3 requirement	
Reactive Phosphorus as P-By Discrete Analyser	EK071G		1	16	6.3	5.0	✓	ALS QCS3 requirement	
Total Phosphorus as P By Discrete Analyser	EK067G		2	34	5.9	5.0	✓	ALS QCS3 requirement	
TPH Volatiles/BTEX	EP080		1	20	5.0	5.0	✓	ALS QCS3 requirement	



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 Work Order : ES0818886
 Client : C M JEWELL & ASSOC PTY LTD
 Project : J1418

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 Description
Alkalinity by PC Titrator	ED037-P	WATER	APHA 21st ed., 2320 B This procedure determines alkalinity by both manual measurement and automated measurement (e.g. PC Titrator) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Sulfate (Turbidimetric) as SO4 2-	ED041	WATER	APHA 21st ed., 4500-SO4 Sulfate ions are precipitated in an acetic acid medium with barium chloride to form barium sulfate crystals. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Chloride by Discrete Analyser	ED045G	WATER	The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride in the presence of ferric ions the liberated thiocyanate forms highly coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Filtered	ED093F	WATER	APHA 21st ed., 3120; USEPA SW 846 - 6010 The ICPAES technique ionises filtered sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QM/EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 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) (Appdx. 2)
Ammonia as N by Discrete analyser	EK055G	WATER	APHA 21st ed., 4500 NH3+G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Nitrite as N by Discrete Analyser	EK057G	WATER	APHA 21st ed., 4500 NO3-B. Nitrite is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Nitrate as N by Discrete Analyser	EK058G	WATER	APHA 21st ed., 4500 NO3-F. Nitrate is reduced to nitrite by way of a cadmium reduction column followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colorimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	APHA 21st ed., 4500 NO3-F. Combined oxidised Nitrogen (NO2+NO3) is determined by Cadmium Reduction and direct colorimetry by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	APHA 21st ed., 4500 P-B&F This procedure involves sulphuric acid digestion of a 100mL sample to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)



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 Work Order : ES0818996
 Client : C M JEWELL & ASSOC PTY LTD
 Project : J1418

Analytical Methods	Method	Matrix	Method Descriptions
Reactive Phosphorus as P-By Discrete Analyser	EK071G	WATER	APHA 21st ed., 4500 P-F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid - phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Ionic Balance by PCT DA Turbidimetric and ICPAES	EN055 - TS	WATER	APHA 21st Ed. 1030F. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Dissolved Organic Carbon	EP002	WATER	APHA 21st ed., 5310 B. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Oil and Grease	EP020	WATER	APHA 21st ed., 5520 B Oil & grease is a gravimetric procedure to determine the amount of oil & grease residue in an aqueous sample. The sample is serially extracted three times n-hexane. The resultant extracts are combined, dehydrated and concentrated prior to gravimetric determination. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Biochemical Oxygen Demand (BOD)	EP030	WATER	APHA 21st ed., 5210 B The 5-Day BOD test provides an empirical measure of the oxygen consumption capacity of a given water. A portion of the sample is diluted into oxygenated, nutrient rich water, and a seed added to begin biological decay. The initial dissolved oxygen content is measured, then the bottle is sealed and incubated for five days. The remaining dissolved oxygen is measured, and from the difference, the demand for oxygen, by biological decay, is determined. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	APHA 21st ed., 4500 Norg - D; APHA 21st ed., 4500 P - H. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Separatory Funnel Extraction of Liquids	ORG14	WATER	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.



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Work Order : ES0818896
Client : C M JEWELL & ASSOC PTY LTD
Project : J1418

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-QW/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

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

Regular Sample Surrogates

Sub-Matrix: WATER							
Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP080S: TPH(V)/BTEX Surrogates	ES0818896-006	BP-03; 5.5	Toluene-D8	2037-26-5	112 %	88-110 %	Recovery greater than upper data quality objective
EP080S: TPH(V)/BTEX Surrogates	ES0818896-010	BP-05; 6.0	Toluene-D8	2037-26-5	115 %	88-110 %	Recovery greater than upper data quality objective
EP080S: TPH(V)/BTEX Surrogates	ES0818896-014	BP-07; 4.0	Toluene-D8	2037-26-5	84.7 %	88-110 %	Recovery less than lower data quality objective
EP080S: TPH(V)/BTEX Surrogates	ES0818896-014	BP-07; 4.0	4-Bromofluorobenzene	460-00-4	83.2 %	86-115 %	Recovery less than lower data quality objective

Outliers : Analysis Holding Time Compliance

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

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

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

- No Quality Control Sample Frequency Outliers exist.

CHAIN OF CUSTODY DOCUMENTATION

CLIENT: C.M. JEWELL & ASSOCIATES PTY LTD
 ADDRESS/OFFICE: 1/13 KALWINA ROAD, BULLABURRA, NSW, 2784
 PROJECT MANAGER (PM): CRAIG VICENCAR (CRAIG)
 PROJECT ID: 31418
 SITE: KWARREE BACK PIT
 P.O. No.: 54/100/100
 RESULTS REQUIRED (Date): ASAP
 QUOTE NO.: 54/100/100

SAMPLER: CRAIG VICENCAR / DAVE ECKSTEIN
 MOBILE: 0428 619 804
 PHONE: (02) 4757 3257
 EMAIL REPORT TO: CRAIG VICENCAR
 EMAIL INVOICE TO: (if different to report)

ANALYSIS REQUIRED INCLUDING SUITES (note - suite codes must be listed to attract suite prices)

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn

Metals: As, Cd, Cr, Cu, Hg, Mn, Pb, Ni, Zn



Australian Laboratory Services Pty Ltd

Subcon / Forward Lab / Split WO
 Lab / Analyte: ES0819015
 Organised By / Date: ES
 Relinquished By / Date: ES
 Cannote / Cont: ES
 WO No.: ES
 Attach By PO / Internal Sheet: ES

Environmental Division
 Sydney
 Work Order
ES0819015



Telephone: +61-2-8784 8555

RECEIVED BY

Name: CRAIG VICENCAR Date: 24/12/08
 Of: C.M. Jewell & Associates Pty Ltd Time: 11:10 a.m.
 Name: Time:
 Name: Time:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved;
 V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bad for Acid Sulphate Soils; B = Unpreserved Bag.

AUSTRALIAN LABORATORY SERVICES P/L

CHAIN OF CUSTODY DOCUMENTATION

CLIENT: C. M. Jewell & Associates Pty Ltd
 ADDRESS / OFFICE: 1/13 Kallandra Road, Kallandra, NSW, 2178
 PROJECT MANAGER (PM): Chris Wicent
 PROJECT ID: J1418
 SITE: Kallandra Bank Pt P.O. No.: 54/100/00
 RESULTS REQUIRED (Date): QUOTE NO.: 57/100/00

SAMPLER: Chris Wicent / Dane Eversen
 MOBILE: 0428 619 804
 PHONE: (02) 4789 3281
 EMAIL REPORT TO: Chris Wicent
 EMAIL INVOICE TO: (if different to report)

ANALYSIS REQUIRED INCLUDING SUITES (note - suite codes must be listed to attract suite prices)

ALS ID	SAMPLE ID	MATRIX	DATE	TIME	CONTAINER INFORMATION		Total bottles	SUITES										Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
					Type	Code		Total Phosphorous	TOC	TAH: C ₁₀ -C ₂₆	PAH	OC						
13	BP: 0-05	Soil	24-12-08	x	250 ml Soil Jar		1	✓	✓	✓	✓	✓						
14	BP: 0-15	Soil	24-12-08	x	250 ml Soil Jar		1	✓	✓	✓	✓	✓						
15	BP: 20-1	Soil	24-12-08	x	250 ml Soil Jar		1	✓	✓	✓	✓	✓						
16	BP: 50-2	Soil	24-12-08	x	250 ml Soil Jar		1	✓	✓	✓	✓	✓						

RELINQUISHED BY: Name: Chris Wicent Date: Dec 2008
 Of: C. M. Jewell & Associates Pty Ltd
 Name: Date: Time: Date: Time: Date: Time: Date: Time:

RECEIVED BY: Name: Southern Date: 24/12/08
 Of: W. J. J. J.
 Name: Date: Time: Date: Time: Date: Time: Date: Time:

METHOD OF SHIPMENT: Cont Note No:
 Transport Co: 1.1000

AUSTRALIAN LABORATORY SERVICES P/L



Environmental Division

SAMPLE RECEIPT NOTIFICATION (SRN)
Comprehensive Report

Work Order : **ES0819015**

Client : **C M JEWELL & ASSOC PTY LTD**
Contact : **MR CRAIG WICENCIAK**
Address : **P O BOX 10**
WENTWORTH FALLS NSW,
AUSTRALIA 2782

Laboratory : **Environmental Division Sydney**
Contact : **Charlie Pierce**
Address : **277-289 Woodpark Road Smithfield**
NSW Australia 2164

E-mail : **craig@cm-jewell.com.au**
Telephone : **+61 47593251**
Facsimile : **+61 02 47593257**

E-mail : **charlie.pierce@alsenviro.com**
Telephone : **+61-2-8784 8555**
Facsimile : **+61-2-8784 8500**

Project : **J141B**
Order number : **SY/100/08**
C-O-C number : **---**
Site : **KIRRAWEE BRICK PIT**
Sampler : **CW DE**

Page : **1 of 2**
Quote number : **ES2008CMJEWE0115 (SY/100/08)**
QC Level : **NEPM 1999 Schedule B(3) and ALS**
QCS3 requirement

Dates

Date Samples Received : **24-DEC-2008**
Client Requested Due Date : **05-JAN-2009**

Issue Date : **24-DEC-2008 15:38**
Scheduled Reporting Date : **05-JAN-2009**

Delivery Details

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

Temperature : **3.6°C**
No. of samples received : **16**
No. of samples analysed : **16**

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **This batch is split into ES0819019 for TOC.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Nanthini Coilparampil
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 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.

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

Matrix: SOIL

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EG035T (solids) Total Mercury by FIMS	SOIL - EK087G (Solids) Total Phosphorus as P by Discrete Analyser	SOIL - EP088A (solids) Organochlorine Pesticides by GC/MS	SOIL - EP071-(SV) TPH(SV) Standard Limits of Reporting	SOIL - EP075 SIM PAH only SIM - PAH only
ES0819015-001	[24-DEC-2008]	BP:01:0.05	✓	✓	✓	✓	✓	✓	✓
ES0819015-002	[24-DEC-2008]	BP:01:0.15	✓	✓	✓	✓	✓	✓	✓
ES0819015-003	[24-DEC-2008]	BP:02:0.05	✓	✓	✓	✓	✓	✓	✓
ES0819015-004	[24-DEC-2008]	BP:02:0.15	✓	✓	✓	✓	✓	✓	✓
ES0819015-005	[24-DEC-2008]	BP:03:0.05	✓	✓	✓	✓	✓	✓	✓
ES0819015-006	[24-DEC-2008]	BP:03:0.15	✓	✓	✓	✓	✓	✓	✓
ES0819015-007	[24-DEC-2008]	BP:04:0.05	✓	✓	✓	✓	✓	✓	✓
ES0819015-008	[24-DEC-2008]	BP:04:0.15	✓	✓	✓	✓	✓	✓	✓
ES0819015-009	[24-DEC-2008]	BP:05:0.05	✓	✓	✓	✓	✓	✓	✓
ES0819015-010	[24-DEC-2008]	BP:05:0.15	✓	✓	✓	✓	✓	✓	✓
ES0819015-011	[24-DEC-2008]	BP:06:0.05	✓	✓	✓	✓	✓	✓	✓
ES0819015-012	[24-DEC-2008]	BP:06:0.15	✓	✓	✓	✓	✓	✓	✓
ES0819015-013	[24-DEC-2008]	BP:07:0.05	✓	✓	✓	✓	✓	✓	✓
ES0819015-014	[24-DEC-2008]	BP:07:0.15	✓	✓	✓	✓	✓	✓	✓
ES0819015-015	[24-DEC-2008]	BP:SD1	✓	✓	✓	✓	✓	✓	✓
ES0819015-016	[24-DEC-2008]	BP:SD2	✓	✓	✓	✓	✓	✓	✓

Requested Deliverables

MR CRAIG WICENCIAK

- *AU Certificate of Analysis - NATA
- *AU Interpretive QC Report - DEFAULT (Anon QC Rep)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA
- A4 - AU Sample Receipt Notification - Environmental
- A4 - AU Tax Invoice
- Default - Chain of Custody
- EDI Format - ENMRG (ENMRG)

Email	craig@cm-jewell.com.au
Email	craig@cm-jewell.com.au
Email	craig@cm-jewell.com.au
Email	craig@cm-jewell.com.au
Print	MR CRAIG WICENCIAK
Email	craig@cm-jewell.com.au
Email	craig@cm-jewell.com.au



Environmental Division

SAMPLE RECEIPT NOTIFICATION (SRN)
Comprehensive Report

Work Order : **ES0819019**

Client : **C M JEWELL & ASSOC PTY LTD**
Contact : **MR CRAIG WICENCIAK**
Address : **P O BOX 10**
WENTWORTH FALLS NSW,
AUSTRALIA 2782

Laboratory : **Environmental Division Sydney**
Contact : **Charlie Pierce**
Address : **277-289 Woodpark Road Smithfield**
NSW Australia 2164

E-mail : **craig@cm-jewell.com.au**
Telephone : **+61 47593251**
Facsimile : **+61 02 47593257**

E-mail : **charlie.pierce@alsenviro.com**
Telephone : **+61-2-8784 8555**
Facsimile : **+61-2-8784 8500**

Project : **J141B**
Order number : **SY/100/08**
C-O-C number : **---**
Site : **KIRRAWEE BRICK PIT**
Sampler : **CW, DE**

Page : **1 of 2**
Quote number : **ES2008CMJEWE0115 (SY/100/08)**
QC Level : **NEPM 1999 Schedule B(3) and ALS**
QCS3 requirement

Dates

Date Samples Received : **24-DEC-2008**
Client Requested Due Date : **05-JAN-2009**

Issue Date : **31-DEC-2008 10:03**
Scheduled Reporting Date : **05-JAN-2009**

Delivery Details

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

Temperature : **3.6°C**
No. of samples received : **16**
No. of samples analysed : **16**

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Requested Deliverables
- Samples received in appropriately pretreated and preserved containers.
- TOC analysis to be conducted by ALS Brisbane.
- **Samples received in appropriately pretreated and preserved containers.**
- **Sample(s) have been received within recommended holding times.**
- **This batch is split from ES0819015 for TOC.**
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Nanthini Coilparampli
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (90 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.

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

Matrix: SOIL

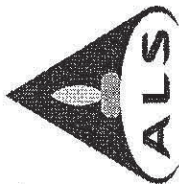
Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EP005 (solids) Total Organic Carbon (TOC) soils
ES0819019-001	[24-DEC-2008]	BP:01:0.05	✓
ES0819019-002	[24-DEC-2008]	BP:01:0.15	✓
ES0819019-003	[24-DEC-2008]	BP:02:0.05	✓
ES0819019-004	[24-DEC-2008]	BP:02:0.15	✓
ES0819019-005	[24-DEC-2008]	BP:03:0.05	✓
ES0819019-006	[24-DEC-2008]	BP:03:0.15	✓
ES0819019-007	[24-DEC-2008]	BP:04:0.05	✓
ES0819019-008	[24-DEC-2008]	BP:04:0.15	✓
ES0819019-009	[24-DEC-2008]	BP:05:0.05	✓
ES0819019-010	[24-DEC-2008]	BP:05:0.15	✓
ES0819019-011	[24-DEC-2008]	BP:06:0.05	✓
ES0819019-012	[24-DEC-2008]	BP:06:0.15	✓
ES0819019-013	[24-DEC-2008]	BP:07:0.05	✓
ES0819019-014	[24-DEC-2008]	BP:07:0.15	✓
ES0819019-015	[24-DEC-2008]	BP:SD1	✓
ES0819019-016	[24-DEC-2008]	BP:SD2	✓

Requested Deliverables

MR CRAIG WICENCIAK

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Print	MR CRAIG WICENCIAK
Email	craig@cm-jewell.com.au
Email	craig@cm-jewell.com.au



Environmental Division

QUALITY CONTROL REPORT

Work Order	: ES0818838	Page	: 1 of 12
Client	: C M JEWELL & ASSOC PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR CRAIG WICENCIAK	Contact	: Charlie Pierce
Address	: P O BOX 10 WENTWORTH FALLS NSW, AUSTRALIA 2782	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: craig@cm-jewell.com.au	E-mail	: charlie.pierce@alsenviro.com
Telephone	: +61 47593251	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 47593257	Facsimile	: +61-2-8784 8500
Project	: J1418	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: KIRRAWEE BRICK PIT	Date Samples Received	: 19-DEC-2008
C-O-C number	: —	Issue Date	: 05-JAN-2009
Sampler	: DVE/CBW	No. of samples received	: 6
Order number	: —	No. of samples analysed	: 6
Quote number	: SY/100/08		

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

This Quality Control Report contains the following information:

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



NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Edwandy Fadjjar	Senior Organic Chemist	Inorganics
Sarah Millington	Senior Inorganic Chemist	Organics
		Inorganics

Environmental Division Sydney
Part of the **ALS Laboratory Group**

277-289 Woodpark Road Smithfield NSW Australia 2164
Tel. +61-2-8784 8555 Fax +61-2-8784 8500 www.alsglobal.com

A Campbell Brothers Limited Company

WORLD RECOGNISED
ACCREDITATION



Page : 2 of 12
Work Order : ES0818838
Client : CM JEWELL & ASSOC PTY LTD
Project : J1418

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 = Chemistry Abstract Services number

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC