



Environmental Division

QUALITY CONTROL REPORT

Work Order	: ES0810742	Page	: 1 of 5
Client	: DELTA ELECTRICITY	Laboratory	: Environmental Division Sydney
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Project	: METALS ANALYSIS	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: VALES POINT ASH DAM WATER	Date Samples Received	: 24-JUL-2008
C-O-C number	: ----	Issue Date	: 04-AUG-2008
Sampler	: SL	No. of samples received	: 6
Order number	: ----	No. of samples analysed	: 6
Quote number	: ----		

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

This Quality Control Report contains the following information:

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



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Accredited for compliance with ISO/IEC 17025.

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
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General Comments

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

Where moisture determination has been preformed, 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



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

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 (%)
EG020C: Leachable Metals by ICPMS (QC Lot: 721618)									
ES0810742-001	TROUGH 1 OUTLET SLUDGE	EG020A-C: Cadmium	7440-43-9	0.001	mg/L	0.003	0.003	0.0	No Limit
		EG020A-C: Arsenic	7440-38-2	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-C: Cobalt	7440-48-4	0.01	mg/L	0.01	0.01	0.0	No Limit
		EG020A-C: Chromium	7440-47-3	0.01	mg/L	<0.10	<0.10	0.0	No Limit
		EG020A-C: Manganese	7439-96-5	0.01	mg/L	1.30	1.29	0.0	0% - 20%
		EG020A-C: Molybdenum	7439-98-7	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-C: Nickel	7440-02-0	0.01	mg/L	0.10	0.10	0.0	0% - 50%
		EG020A-C: Lead	7439-92-1	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-C: Antimony	7440-36-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-C: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-C: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-C: Iron	7439-89-6	0.05	mg/L	84.6	83.3	1.4	0% - 20%
		EG020A-C: Aluminium	7429-90-5	0.1	mg/L	0.6	0.6	0.0	No Limit
		EG020A-C: Boron	7440-42-8	0.1	mg/L	0.7	0.7	0.0	No Limit
		EG020A-C: Zinc	7440-66-6	0.1	mg/L	0.7	0.6	0.0	No Limit
EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QC Lot: 721899)									
ES0810742-004	TROUGH 1 OUTLET WATER	EG093A-F: Molybdenum	7439-98-7	0.1	µg/L	2.2	2.4	5.6	0% - 20%
		EG093A-F: Cadmium	7440-43-9	0.2	µg/L	<0.2	<0.2	0.0	No Limit
		EG093A-F: Cobalt	7440-48-4	0.2	µg/L	5.7	5.7	0.0	0% - 20%
		EG093A-F: Lead	7439-92-1	0.2	µg/L	1.6	1.6	0.0	No Limit
		EG093A-F: Antimony	7440-36-0	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG093A-F: Arsenic	7440-38-2	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG093A-F: Chromium	7440-47-3	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG093A-F: Manganese	7439-96-5	0.5	µg/L	8230	8170	0.8	0% - 20%
		EG093A-F: Nickel	7440-02-0	0.5	µg/L	6.7	7.8	14.8	0% - 50%
		EG093A-F: Vanadium	7440-62-2	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EG093A-F: Aluminium	7429-90-5	10	µg/L	<10	<10	0.0	No Limit
		EG093A-F: Boron	7440-42-8	100	µg/L	11600	12000	2.8	0% - 20%
		EG093A-F: Zinc	7440-66-6	5	µg/L	54	63	16.4	0% - 50%
EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QC Lot: 721900)									
ES0810742-004	TROUGH 1 OUTLET WATER	EG093B-F: Selenium	7782-49-2	2	µg/L	<2	<2	0.0	No Limit
		EG093B-F: Iron	7439-89-6	5	µg/L	34200	35000	2.0	0% - 20%



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**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020C: Leachable Metals by ICPMS (QCLot: 721618)								
EG020A-C: Aluminium	7429-90-5	0.1	mg/L	<0.1	0.5 mg/L	105	70	130
EG020A-C: Arsenic	7440-38-2	0.005	mg/L	<0.005	0.1 mg/L	99.2	70	130
EG020A-C: Boron	7440-42-8	0.1	mg/L	<0.1	0.1 mg/L	101	70	130
EG020A-C: Cadmium	7440-43-9	0.001	mg/L	<0.001	0.1 mg/L	93.5	70	130
EG020A-C: Cobalt	7440-48-4	0.01	mg/L	<0.01	0.1 mg/L	102	70	130
EG020A-C: Chromium	7440-47-3	0.01	mg/L	<0.10	0.1 mg/L	97.3	70	130
EG020A-C: Manganese	7439-96-5	0.01	mg/L	<0.01	0.1 mg/L	91.8	70	130
EG020A-C: Molybdenum	7439-98-7	0.01	mg/L	<0.01	0.1 mg/L	95.4	70	130
EG020A-C: Nickel	7440-02-0	0.01	mg/L	<0.01	0.1 mg/L	96.1	70	130
EG020A-C: Lead	7439-92-1	0.01	mg/L	<0.01	0.1 mg/L	100	70	130
EG020A-C: Antimony	7440-36-0	0.01	mg/L	<0.01	----	----	----	----
EG020A-C: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	99.2	70	130
EG020A-C: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	94.2	70	130
EG020A-C: Zinc	7440-66-6	0.1	mg/L	<0.1	0.1 mg/L	93.5	70	130
EG020A-C: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	103	70	130
EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QCLot: 721899)								
EG093A-F: Aluminium	7429-90-5	10	µg/L	<10	500 µg/L	107	82.6	117
EG093A-F: Antimony	7440-36-0	0.5	µg/L	<0.5	----	----	----	----
EG093A-F: Arsenic	7440-38-2	0.5	µg/L	<0.5	100 µg/L	99.2	85.2	114
EG093A-F: Boron	7440-42-8	100	µg/L	<100	----	----	----	----
EG093A-F: Cadmium	7440-43-9	0.2	µg/L	<0.2	100 µg/L	91.8	76.8	105
EG093A-F: Chromium	7440-47-3	0.5	µg/L	<0.5	100 µg/L	95.5	81.5	113
EG093A-F: Cobalt	7440-48-4	0.2	µg/L	<0.2	100 µg/L	101	80.8	113
EG093A-F: Lead	7439-92-1	0.2	µg/L	<0.2	100 µg/L	# 83.7	85.2	117
EG093A-F: Manganese	7439-96-5	0.5	µg/L	<0.5	100 µg/L	109	80.3	120
EG093A-F: Molybdenum	7439-98-7	0.1	µg/L	<0.1	100 µg/L	90.7	85.7	110
EG093A-F: Nickel	7440-02-0	0.5	µg/L	<0.5	100 µg/L	94.7	81.8	111
EG093A-F: Vanadium	7440-62-2	0.5	µg/L	<0.5	100 µg/L	95.6	85.4	117
EG093A-F: Zinc	7440-66-6	5	µg/L	<5	100 µg/L	94.6	82	114
EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QCLot: 721900)								
EG093B-F: Selenium	7782-49-2	2	µg/L	<2	100 µg/L	103	70	130
EG093B-F: Iron	7439-89-6	5	µg/L	<5	500 µg/L	104	70	130



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**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%) LowHigh	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number				
EG020C: Leachable Metals by ICPMS (QCLot: 721618)							
ES0810742-002	TROUGH 2 OUTLET SLUDGE	EG020A-C: Arsenic	7440-38-2	1 mg/L	111	70	130
		EG020A-C: Cadmium	7440-43-9	0.25 mg/L	92.4	70	130
		EG020A-C: Cobalt	7440-48-4	1 mg/L	104	70	130
		EG020A-C: Chromium	7440-47-3	1 mg/L	94.1	70	130
		EG020A-C: Manganese	7439-96-5	1 mg/L	# Not Determined	70	130
		EG020A-C: Nickel	7440-02-0	1 mg/L	95.9	70	130
		EG020A-C: Lead	7439-92-1	1 mg/L	88.7	70	130
		EG020A-C: Vanadium	7440-62-2	1 mg/L	95.8	70	130
		EG020A-C: Zinc	7440-66-6	1 mg/L	86.2	70	130
EG093F: Dissolved Metals in Saline Water by ORC-ICPMS (QCLot: 721899)							
ES0810742-004	TROUGH 1 OUTLET WATER	EG093A-F: Arsenic	7440-38-2	200 µg/L	121	70	130
		EG093A-F: Cadmium	7440-43-9	50 µg/L	102	70	130
		EG093A-F: Chromium	7440-47-3	200 µg/L	114	70	130
		EG093A-F: Cobalt	7440-48-4	200 µg/L	97.5	70	130
		EG093A-F: Lead	7439-92-1	200 µg/L	87.3	70	130
		EG093A-F: Manganese	7439-96-5	200 µg/L	# Not Determined	70	130
		EG093A-F: Nickel	7440-02-0	200 µg/L	111	70	130
		EG093A-F: Vanadium	7440-62-2	200 µg/L	119	70	130
		EG093A-F: Zinc	7440-66-6	200 µg/L	119	70	130