



Carbon Based Environmental  
Pty Limited  
ABN 74 102 920 285

29 November 2013

Rocla Quarry Products  
Rocla Calga Quarry  
Mr Pat McCue  
PO Box 36  
GUILDFORD NSW 2161

Dear Pat,

**Six Monthly Rocla Calga Quarry Major Cations and Dissolved  
Metals Environmental Monitoring Report – October 2013**

Please find enclosed the six monthly detailed groundwater monitoring report for 25 groundwaters at the Rocla Calga site. This report contains the six monthly detailed water analysis for major cations and dissolved metals that is required by the Site Water Management Plan.

19 sites were able to be collected and analysed on the 1 October 2013, while 6 samples could not be collected. Groundwater site CQ6 was inaccessible due to an electric fence, MW10, MW13 and MW16 were inaccessible due to a bad track and CP4 and CP6 were unable to be sampled due to power outage to the pump. Comparison of results between the 5 April 2013 and the 1 October 2013 shows little apparent change in water quality, apart from the following; a slight decrease in Electrical Conductivity at CQ1 ( $>100 \mu\text{S}/\text{cm}$ ), a slight increase in Sulfate at CQ1 (+24 mg/L), a slight increase in Chloride at CQ1 (+17 mg/L), an increase in Iron at CP7 (+2.4 mg/L) and decrease at CQ3 (-1.8 mg/L), a slight decrease in Nitrate at CQ1 (-1.2 mg/L) and CQ5 (-1.2 mg/L) and an increase in Nitrate at CP7 (+1.5 mg/L) and CP4 (+1.25 mg/L).

The changes in some of the quality parameters at CQ1 may be attributed to the damage and subsequent repair of the bore in early 2012, and purging of the bore in late 2012.

Please do not hesitate to contact me if further information is required.

Yours Faithfully

Colin Davies  
Environmental Scientist / Company Director

**Table 1: Comparison of analysis results between April 2013 and October 2013 sampling events.**

Species	Units	CQ1	CQ3	CQ4	CQ5	CQ6	CQ7	CQ8	CQ9	CQ10	CQ11S	CQ11D	CQ12
pH Value	pH units	-0.28	-0.38	0.43	0.76		-0.70	0.46	0.08	0.16	0.45	0.19	0.36
Electrical Conductivity @ 25°C	µS/cm	134	-26	2	6		4	0	3	4	-4	2	21
Hydroxide Alkalinity as CaCO <sub>3</sub>	ppm	0	0	0	0		0	0	0	0	0	0	0
Carbonate Alkalinity as CaCO <sub>3</sub>	ppm	0	0	0	0		0	0	0	0	0	0	0
Bicarbonate Alkalinity as CaCO <sub>3</sub>	ppm	25	-13	1	0		-3	0	0	0	0	0	0
Total Alkalinity as CaCO <sub>3</sub>	ppm	25	-13	1	0		-3	0	0	0	0	0	0
Sulphate as SO <sub>4</sub> <sup>2-</sup>	ppm	24.0	0.0	-1.0	0.0		-2.0	-1.0	-1.0	2.0	-3.0	-4.0	8.0
Chloride	ppm	17.0	2.0	3.0	10.0		5.0	4.0	4.0	2.0	2.0	1.0	-4.0
Calcium	ppm	15	0	0	-2		0	0	0	0	0	0	0
Magnesium	ppm	2	0	0	2		0	1	0	0	1	1	3
Sodium	ppm	7	0	2	6		1	1	1	1	2	1	-1
Potassium	ppm	4	-1	0	-2		0	0	0	0	0	0	0
Aluminium	ppm	-0.75	-0.13	0.14	0.74		0.08	0.00	0.05	0.25	-0.06	0.00	0.46
Arsenic	ppm	0	0	0	0		0	0	0	-0.001	0	0	0
Cadmium	ppm	0	0	0	0		0	0	0	-0.0001	0	0	0
Chromium	ppm	0.001	0	0	0		0	0	0	-0.002	0	0.004	0
Copper	ppm	0.002	0.002	0.003	-0.001		0	0.001	0.001	-0.006	-0.001	-0.002	-0.002
Lead	ppm	-0.002	0.001	0	-0.001		0	-0.003	-0.001	-0.008	-0.002	-0.036	-0.005
Manganese	ppm	-0.174	-0.120	-0.028	-0.003		-0.002	-0.003	0	-0.007	0.003	-0.004	-0.002
Nickel	ppm	-0.002	0.005	0.002	0		0	0.001	0	-0.001	0	0	-0.001
Selenium	ppm	0	0	0	0		0	0	0	0	0	0	0
Zinc	ppm	0.186	-0.011	0.052	-0.025		-0.007	-0.049	0.008	-0.068	0.023	-0.067	-0.167
Boron	ppm	0	0	0	0		0	0	0	0	0	0	0
Iron	ppm	-0.98	-1.80	-0.18	0.08		0.00	-0.05	0.11	-0.37	0.05	-0.21	0
Mercury	ppm	0	0	0	0		0	0	0	0	0	0	0
Fluoride	ppm	0	0	0	0		0	0	0	0	0	0	0
Nitrite as N	ppm	0	-0.05	0	0		0	0	0	0	0	0	0
Nitrate as N	ppm	-1.22	-0.65	0.28	-1.2		0.14	-0.16	-0.2	-0.14	-0.33	-0.12	-0.61
Nitrite + Nitrate as N	ppm	-1.22	-0.71	0.28	-1.2		0.14	-0.16	-0.2	-0.14	-0.33	-0.12	-0.61

Note: Results shown as below the limit of detection (<) have been taken as zero for the purposes of the comparison.

**Table 1 continued.**

Species	Units	CQ13	CP3	CP4	CP5	CP6	CP7	CP8	MW7	MW8	MW9	MW10	MW13	MW16
pH Value	pH units	0.38	0.38		0.55		-0.67	0.45	0.10	-0.45	0.33			
Electrical Conductivity @ 25°C	µS/cm	5	-14		18		36	-6	4	-4	2			
Hydroxide Alkalinity as CaCO <sub>3</sub>	ppm	0	0		0		0	0	0	0	0			
Carbonate Alkalinity as CaCO <sub>3</sub>	ppm	0	0		0		0	0	0	0	0			
Bicarbonate Alkalinity as CaCO <sub>3</sub>	ppm	0	0		0		-2	0	0	-4	0			
Total Alkalinity as CaCO <sub>3</sub>	ppm	0	0		0		-2	0	0	-4	0			
Sulphate as SO <sub>4</sub> <sup>2-</sup>	ppm	0.0	-4.0		-2.0		1.0	0.0	0.0	0.0	0.0			
Chloride	ppm	1.0	1.0		5.0		7.0	2.0	2.0	2.0	2.0			
Calcium	ppm	0	0		-1		1	0	0	0	0			
Magnesium	ppm	0	0		3		2	0	0	1	0			
Sodium	ppm	9	1		0		2	1	1	0	1			
Potassium	ppm	1	-1		0		-1	0	0	0	0			
Aluminium	ppm	0.10	-0.05		-0.09		0.28	-0.19	-0.02	-0.03	0.07			
Arsenic	ppm	0	0		0		0	0	0	0	0			
Cadmium	ppm	0	0		0		0	0	0	0	0			
Chromium	ppm	0	0		-0.001		-0.001	0	0	0	0			
Copper	ppm	-0.002	-0.002		0.024		-0.003	-0.001	-0.003	-0.001	0.003			
Lead	ppm	-0.007	-0.005		-0.004		0.001	-0.002	-0.002	-0.002	0.005			
Manganese	ppm	-0.003	0		0		-0.273	-0.008	-0.006	-0.001	0.001			
Nickel	ppm	0	-0.001		0.007		-0.001	0	0	-0.001	0.002			
Selenium	ppm	0	0		0		0	0	0	0	0			
Zinc	ppm	-0.028	0.011		0.558		-0.016	-0.012	-0.067	-0.008	0.046			
Boron	ppm	0	-0.06		0		0	0	0	0	0			
Iron	ppm	-0.10	-0.55		0.00		2.24	-0.09	-0.07	-0.15	0.06			
Mercury	ppm	0	0		0		0	0	0	0	0			
Fluoride	ppm	0	0		0		0	0	0	0	-0.2			
Nitrite as N	ppm	0	0		0		0	0	0	0	0			
Nitrate as N	ppm	0.50	0.11		1.50		1.25	-0.37	-0.78	-0.06	0.04			
Nitrite + Nitrate as N	ppm	0.50	0.11		1.50		1.25	-0.37	-0.78	-0.06	0.04			

Note: Results shown as below the limit of detection (<) have been taken as zero for the purposes of the comparison.



CARBON BASED ENVIRONMENTAL PTY LIMITED

Today's Collection	
Time Start:	9.15
Time Finish:	2.20

Date: 1.10.13

Client : Rocla Calga  
Project :

## GROUNDWATERS

Site	DEPTH	Odour	Water Turbidity	Water Colour	1		2		Bottles (Apr/Oct)	Downloaded Logger? (Y/N)
					pH	EC	pH	EC		
CQ1	18.57	NO	CST	CLOOBG	7.65	313.4us	7.62	316.4us	1x 250ml GP, 1x 1L GP, 1RP	yes
CQ3	10.30	NO	CST	CLOOBG	5.95	168.2us	5.98	167.4us	1x 250ml GP, 1x 1L GP, 1RP	yes
CQ4	10.15	NO	CST	CLOOBG	4.87	96.2us	4.86	94.8us	1x 250ml GP, 1x 1L GP, 1RP	yes
CQ5	6.61	NO	CST	CLOOBG	4.24	193.7us	4.24	198.6us	1x 250ml GP, 1x 1L GP, 1RP	
CQ6			CST	CLOOBG					1x 250ml GP, 1x 1L GP, 1RP	No Access, electric fence.
CQ7	6.51	NO	CST	CLOOBG	4.58	105.1us	4.58	106.2us	1x 250ml GP, 1x 1L GP, 1RP	not working
CQ8	6.24	NO	CST	CLOOBG	4.39	159.9us	4.35	158.9us	1x 250ml GP, 1x 1L GP, 1RP	not working
CQ9	9.11	NO	CST	CLOOBG	4.48	121.4us	4.48	119.6us	1x 250ml GP, 1x 1L GP, 1RP	
CQ10	22.73	NO	CST	CLOOBG	4.75	198.6us	4.64	198.0us	1x 250ml GP, 1x 1L GP, 1RP	not working
CQ11S	10.28	NO	CST	CLOOBG	4.66	164.6us	4.62	164.1us	1x 250ml GP, 1x 1L GP, 1RP	yes
CQ11D	11.42	NO	CST	CLOOBG	4.64	165.1us	4.65	166.1us	1x 250ml GP, 1x 1L GP, 1RP	yes
CQ12	4.18	NO	CST	CLOOBG	4.39	143.3us	4.38	144.1us	1x 250ml GP, 1x 1L GP, 1RP	yes
CQ13	13.04	NO	CST	CLOOBG	4.28	259.3us	4.30	260.5us	1x 250ml GP, 1x 1L GP, 1RP	yes
CP3	10.88	NO	CST	CLOOBG	4.62	158.0us	4.60	159.3us	1x 250ml GP, 1x 1L GP, 1RP	
CP4	9.99		CST	CLOOBG					1x 250ml GP, 1x 1L GP, 1RP	NO POWER for pump
CP5	7.39	NO	CST	CLOOBG	4.26	274.8us	4.27	272.8us	1x 250ml GP, 1x 1L GP, 1RP	
CP6	9.36		CST	CLOOBG					1x 250ml GP, 1x 1L GP, 1RP	
CP7	2.61	NO	CST	CLOOBG	4.72	182.0us	4.75	183.8us	1x 250ml GP, 1x 1L GP, 1RP	NO POWER for pump
CP8	20.05	NO	CST	CLOOBG	4.30	163.2us	4.29	163.4us	1x 250ml GP, 1x 1L GP, 1RP	Only required Apr/Oct
MW7	15.90	NO	CST	CLOOBG	4.50	122.2us	4.48	122.8us	1x 250ml GP, 1x 1L GP, 1RP	yes
MW8	7.08	NO	CST	CLOOBG	4.72	83.4us	4.73	83.6us	1x 250ml GP, 1x 1L GP, 1RP	yes
MW9	21.82	NO	CST	CLOOBG	4.50	97.6us	4.49	98.3us	1x 250ml GP, 1x 1L GP, 1RP	
MW10			CST	CLOOBG					1x 250ml GP, 1x 1L GP, 1RP	No Access Bad track
MW13			CST	CLOOBG					1x 250ml GP, 1x 1L GP, 1RP	
MW16			CST	CLOOBG					1x 250ml GP, 1x 1L GP, 1RP	

Turbidity: C=Clear, S= Slight, T=Turbid (CIRCLE)

Colour: C=Clear, LO=Light Orange, O=Orange, B=Brown, G=Green (CIRCLE)

pH/EC meter #: 6

Signed: [Signature]

Sampled by: Leesa + J.11





## CERTIFICATE OF ANALYSIS

Work Order	: ES1321552	Page	: 1 of 10
Client	: CARBON BASED ENVIRONMENTAL	Laboratory	: Environmental Division Sydney
Contact	: MR COLIN DAVIES	Contact	: Client Services
Address	: 47 BOOMERANG ST CESSNOCK NSW, AUSTRALIA 2325	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: cbased@bigpond.com	E-mail	: sydney@alsglobal.com
Telephone	: +61 49904443	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 49904442	Facsimile	: +61-2-8784 8500
Project	: ROCLA G WATERS	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: ---		
C-O-C number	: ---	Date Samples Received	: 02-OCT-2013
Sampler	: CBE	Issue Date	: 09-OCT-2013
Site	: ---		
Quote number	: SY/428/12	No. of samples received	: 19
		No. of samples analysed	: 19

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

Signatories	Position	Accreditation Category
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Merrin Avery	Supervisor - Inorganic	Newcastle - Inorganics





### General Comments

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

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

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

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

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

- EK059G: LOR raised for NOx on sample ID (NEATH 2, DUPLICATE) due to sample matrix.

Sub-Matrix: **WATER** (Matrix: **WATER**)

Client sample ID

Client sampling date / time

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	CQ1	CQ3	CQ4	CQ5	CQ7
Client sampling date / time					[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]
Compound	CAS Number	LOR	Unit		ES1321552-001	ES1321552-002	ES1321552-003	ES1321552-004	ES1321552-005
EA005: pH									
pH Value	----	0.01	pH Unit		7.73	6.06	5.30	4.57	4.99
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		306	118	106	200	116
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		71	21	1	<1	<1
Total Alkalinity as CaCO3	----	1	mg/L		71	21	1	<1	<1
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		38	<1	6	25	1
ED045G: Chloride Discrete analyser									
Chloride	16887-00-6	1	mg/L		27	24	25	32	28
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		34	2	<1	1	<1
Magnesium	7439-95-4	1	mg/L		3	4	1	6	2
Sodium	7440-23-5	1	mg/L		22	13	17	20	15
Potassium	7440-09-7	1	mg/L		8	1	<1	<1	<1
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		3.98	0.14	0.31	1.81	0.19
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		0.010	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		0.012	0.002	0.003	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L		0.012	0.002	0.002	0.001	<0.001
Manganese	7439-96-5	0.001	mg/L		0.088	1.47	0.006	0.005	0.001
Nickel	7440-02-0	0.001	mg/L		0.005	0.014	0.002	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L		0.818	0.032	0.084	0.024	0.006
Boron	7440-42-8	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05
Iron	7439-89-6	0.05	mg/L		3.72	17.5	0.23	0.16	<0.05
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator									





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				CQ1	CQ3	CQ4	CQ5	CQ7
Client sampling date / time				[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]
Compound	CAS Number	LOR	Unit	ES1321552-001	ES1321552-002	ES1321552-003	ES1321552-004	ES1321552-005
<b>EK040P: Fluoride by PC Titrator - Continued</b>								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EK057G: Nitrite as N by Discrete Analyser</b>								
Nitrite as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EK058G: Nitrate as N by Discrete Analyser</b>								
Nitrate as N	14797-55-8	0.01	mg/L	0.26	<0.01	0.88	2.58	1.58
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
Nitrite + Nitrate as N	----	0.01	mg/L	0.26	<0.01	0.88	2.58	1.58
<b>EN055: Ionic Balance</b>								
Total Anions	----	0.01	meq/L	----	1.10	0.85	1.42	0.81
Total Anions	----	0.01	meq/L	2.99	----	----	----	----
Total Cations	----	0.01	meq/L	3.11	1.02	0.82	1.41	0.82
Ionic Balance	----	0.01	%	1.94	----	----	----	----

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	CQ8	CQ9	CQ10	CQ11S	CQ11D
Client sampling date / time					[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]
Compound	CAS Number	LOR	Unit		ES1321552-006	ES1321552-007	ES1321552-008	ES1321552-009	ES1321552-010
EA005: pH									
pH Value	----	0.01	pH Unit		4.83	4.95	4.96	4.99	4.95
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		156	121	182	168	169
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		<1	<1	<1	<1	<1
Total Alkalinity as CaCO3	----	1	mg/L		<1	<1	<1	<1	<1
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		4	2	31	34	38
ED045G: Chloride Discrete analyser									
Chloride	16887-00-6	1	mg/L		25	32	31	25	23
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		<1	<1	3	<1	<1
Magnesium	7439-95-4	1	mg/L		5	2	4	5	5
Sodium	7440-23-5	1	mg/L		18	17	21	20	20
Potassium	7440-09-7	1	mg/L		<1	<1	<1	4	1
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		0.56	0.24	1.61	0.99	1.58
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	0.004
Copper	7440-50-8	0.001	mg/L		0.003	0.001	0.014	0.005	0.002
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	0.006	0.008	0.006
Manganese	7439-96-5	0.001	mg/L		0.002	0.003	0.031	0.015	0.015
Nickel	7440-02-0	0.001	mg/L		0.001	<0.001	0.004	0.002	0.002
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L		0.022	0.018	0.137	0.114	0.199
Boron	7440-42-8	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05
Iron	7439-89-6	0.05	mg/L		0.06	0.11	0.13	0.20	0.22
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator									





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				CQ8	CQ9	CQ10	CQ11S	CQ11D
Client sampling date / time				[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]
Compound	CAS Number	LOR	Unit	ES1321552-006	ES1321552-007	ES1321552-008	ES1321552-009	ES1321552-010
<b>EK040P: Fluoride by PC Titrator - Continued</b>								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EK057G: Nitrite as N by Discrete Analyser</b>								
Nitrite as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EK058G: Nitrate as N by Discrete Analyser</b>								
Nitrate as N	14797-55-8	0.01	mg/L	7.12	0.98	0.55	0.07	<0.01
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
Nitrite + Nitrate as N	----	0.01	mg/L	7.12	0.98	0.55	0.07	<0.01
<b>EN055: Ionic Balance</b>								
Total Anions	----	0.01	meq/L	0.79	0.94	1.52	1.41	1.44
Total Cations	----	0.01	meq/L	1.19	0.90	1.39	1.38	1.31

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	CQ12	CQ13	CP3	CP5	CP7
Client sampling date / time				[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	
Compound	CAS Number	LOI	Unit	ES1321552-011	ES1321552-012	ES1321552-013	ES1321552-014	ES1321552-015	
EA005: pH									
pH Value	----	0.01	pH Unit	4.81	4.77	5.03	4.75	5.04	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	146	240	154	249	177	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	<1	<1	<1	<1	<1	
Total Alkalinity as CaCO3	----	1	mg/L	<1	<1	<1	<1	<1	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	26	<1	17	<1	26	
ED045G: Chloride Discrete analyser									
Chloride	16887-00-6	1	mg/L	18	39	27	25	17	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	<1	<1	<1	1	8	
Magnesium	7439-95-4	1	mg/L	6	8	3	16	6	
Sodium	7440-23-5	1	mg/L	12	27	23	13	8	
Potassium	7440-09-7	1	mg/L	<1	1	1	2	9	
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L	0.97	1.14	0.45	0.86	0.38	
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	<0.001	0.002	0.263	0.054	<0.001	
Lead	7439-92-1	0.001	mg/L	<0.001	0.003	0.015	0.007	0.001	
Manganese	7439-96-5	0.001	mg/L	0.002	0.003	0.003	0.002	0.020	
Nickel	7440-02-0	0.001	mg/L	<0.001	0.001	<0.001	0.009	<0.001	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	0.010	0.024	0.078	0.584	0.028	
Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	
Iron	7439-89-6	0.05	mg/L	<0.05	0.08	0.46	<0.05	3.02	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
EK040P: Fluoride by PC Titrator									



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 Work Order : ES1321552  
 Client : CARBON BASED ENVIRONMENTAL  
 Project : ROCLA G WATERS



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				CQ12	CQ13	CP3	CP5	CP7
				[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]
Compound	CAS Number	LOR	Unit	ES1321552-011	ES1321552-012	ES1321552-013	ES1321552-014	ES1321552-015
<b>EK040P: Fluoride by PC Titrator - Continued</b>								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1
<b>EK057G: Nitrite as N by Discrete Analyser</b>								
Nitrite as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
<b>EK058G: Nitrate as N by Discrete Analyser</b>								
Nitrate as N	14797-55-8	0.01	mg/L	0.57	11.5	2.47	18.9	5.78
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
Nitrite + Nitrate as N	----	0.01	mg/L	0.57	11.5	2.47	18.9	5.78
<b>EN055: Ionic Balance</b>								
Total Anions	----	0.01	meq/L	1.05	1.10	1.12	0.71	1.02
Total Cations	----	0.01	meq/L	1.02	1.86	1.27	1.98	1.47

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	CP8	MW7	MW8	MW9	----
Client sampling date / time					[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	----
Compound	CAS Number	LOR	Unit		ES1321552-016	ES1321552-017	ES1321552-018	ES1321552-019	----
EA005: pH									
pH Value	----	0.01	pH Unit		4.78	4.87	5.09	5.01	---
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		156	124	86	97	---
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L		<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L		<1	<1	<1	<1	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L		<1	<1	<1	<1	----
Total Alkalinity as CaCO3	----	1	mg/L		<1	<1	<1	<1	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L		6	3	4	2	---
ED045G: Chloride Discrete analyser									
Chloride	16887-00-6	1	mg/L		35	31	22	26	---
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		<1	<1	<1	<1	----
Magnesium	7439-95-4	1	mg/L		3	2	2	1	----
Sodium	7440-23-5	1	mg/L		21	17	12	13	----
Potassium	7440-09-7	1	mg/L		<1	<1	<1	<1	----
EG020T: Total Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		0.57	0.28	0.20	0.23	----
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		0.001	0.001	0.001	0.004	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	0.005	----
Manganese	7439-96-5	0.001	mg/L		0.002	0.005	0.004	0.007	----
Nickel	7440-02-0	0.001	mg/L		<0.001	0.001	<0.001	0.002	----
Selenium	7782-49-2	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L		0.006	0.012	0.033	0.056	----
Boron	7440-42-8	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	----
Iron	7439-89-6	0.05	mg/L		<0.05	0.06	<0.05	0.06	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EK040P: Fluoride by PC Titrator									





## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				CP8	MW7	MW8	MW9	----
Client sampling date / time				[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	[02-OCT-2013]	----
Compound	CAS Number	LOR	Unit	ES1321552-016	ES1321552-017	ES1321552-018	ES1321552-019	---
<b>EK040P: Fluoride by PC Titrator - Continued</b>								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	<0.1	<0.1	---
<b>EK057G: Nitrite as N by Discrete Analyser</b>								
Nitrite as N	----	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	---
<b>EK058G: Nitrate as N by Discrete Analyser</b>								
Nitrate as N	14797-55-8	0.01	mg/L	1.89	0.08	0.10	0.22	---
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
Nitrite + Nitrate as N	----	0.01	mg/L	1.89	0.08	0.10	0.22	---
<b>EN055: Ionic Balance</b>								
Total Anions	----	0.01	meq/L	1.11	0.94	0.70	0.78	---
Total Cations	----	0.01	meq/L	1.16	0.90	0.69	0.65	---