

QUALITY CONTROL REPORT

Work Order : **EM2212384**

: Dept for Environment & Water

Contact : DARCY MORRIS

Address : GPO BOX 2834

ADELAIDE SA, AUSTRALIA 5001

Telephone : ----

Client

Project : HCHB Monitoring Program

Order number : -

C-O-C number : 39418

Sampler : DARCY MORRIS, ROWLAND BOXALL

Site : HCHB Boat - 29-30 June 2022

Quote number : AD/052/20 V2

No. of samples received : 10
No. of samples analysed : 10

Page : 1 of 6

Laboratory : Environmental Division Melbourne

Contact : Kieren Burns

Address : 4 Westall Rd Springvale VIC Australia 3171

Telephone : +61881625130

Date Samples Received : 01-Jul-2022

Date Analysis Commenced : 01-Jul-2022

Issue Date : 11-Jul-2022



130/IEC 17023 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

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

Signatories

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

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Dilani Fernando	Laboratory Coordinator	Melbourne Inorganics, Springvale, VIC
Jarwis Nheu	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC

Page : 2 of 6
Work Order : EM2212384

Client : Dept for Environment & Water
Project : HCHB Monitoring Program



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key: Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot

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

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: WATER						Laboratory I	Duplicate (DUP) Report		
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EK055G-SW: Ammo	nia as N by Discrete Analyse	er in Saline Water (QC Lot: 4439188)							
EM2212384-001	Murray Mouth	EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	0.13	0.13	0.0	No Limit
EM2212384-010	1.8km west of Salt Creek	EK055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	<0.02	<0.02	0.0	No Limit
EA015: Total Dissolv	ved Solids dried at 180 ± 5 °C	QC Lot: 4439447)							
EM2212384-008	Snipe Point	EA015H: Total Dissolved Solids @180°C		10	mg/L	62400	68600	9.4	0% - 20%
EM2212385-008	Anonymous	EA015H: Total Dissolved Solids @180°C		10	mg/L	8330	8610	3.3	0% - 20%
EM2212307-001	Anonymous	EA015H: Total Dissolved Solids @180°C		10	mg/L	26	26	0.0	No Limit
EM2212355-001	Anonymous	EA015H: Total Dissolved Solids @180°C		10	mg/L	699	632	10.1	0% - 20%
EA045: Turbidity (Q	C Lot: 4435556)								
EM2212384-001	Murray Mouth	EA045: Turbidity		0.1	NTU	28.4	33.2	15.6	0% - 20%
EM2212384-010	1.8km west of Salt Creek	EA045: Turbidity		0.1	NTU	12.8	11.9	7.3	0% - 20%
ED037P: Alkalinity b	y PC Titrator (QC Lot: 4437)	094)							
EM2212384-002	Mark Point	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	101	101	0.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3		1	mg/L	101	101	0.0	0% - 20%
EM2212385-002	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	88	89	0.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3		1	mg/L	88	89	0.0	0% - 20%
ED045G: Chloride by	/ Discrete Analyser (QC Lot	: 4435179)							
EM2212485-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	493	491	0.5	0% - 20%
EM2212384-001	Murray Mouth	ED045G: Chloride	16887-00-6	1	mg/L	11700	11800	0.7	0% - 20%
ED045G: Chloride by	/ Discrete Analyser (QC Lot	: 4435755)							

Page : 3 of 6
Work Order : EM2212384

Client : Dept for Environment & Water
Project : HCHB Monitoring Program



Sub-Matrix: WATER			Laboratory Duplicate (DUP) Report								
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)		
ED045G: Chloride b	y Discrete Analyser (QC L	ot: 4435755) - continued									
EM2212385-007	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	2450	2460	0.1	0% - 20%		
EM2212384-003	Parnka Point	ED045G: Chloride	16887-00-6	1	mg/L	29000	29000	0.1	0% - 20%		
EG052G: Silica by Discrete Analyser (QC Lot: 4435177)											
EM2212384-001	Murray Mouth	EG052G: Reactive Silica		0.05	mg/L	1.29	1.28	0.0	0% - 20%		
EG052G: Silica by D	Discrete Analyser (QC Lot:	4435753)									
EM2212385-009	Anonymous	EG052G: Reactive Silica		0.05	mg/L	15.6	15.7	0.6	0% - 20%		
EM2212384-003	Parnka Point	EG052G: Reactive Silica		0.05	mg/L	1.80	1.79	0.0	0% - 20%		
EK057G: Nitrite as	N by Discrete Analyser (Qo	C Lot: 4435178)									
EM2212485-003	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit		
EM2212384-001	Murray Mouth	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit		
EK057G: Nitrite as	N by Discrete Analyser (Qo	C Lot: 4435754)									
EM2212385-008	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit		
EM2212384-003	Parnka Point	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.0	No Limit		
EK059G: Nitrite plu	s Nitrate as N (NOx) by Dis	screte Analyser (QC Lot: 4439189)									
EM2212384-001	Murray Mouth	EK059G: Nitrite + Nitrate as N		0.01	mg/L	0.04	0.03	0.0	No Limit		
EM2212384-010	1.8km west of Salt Creek	EK059G: Nitrite + Nitrate as N		0.01	mg/L	<0.01	<0.01	0.0	No Limit		
EK061G: Total Kjelo	dahl Nitrogen By Discrete A	nalyser (QC Lot: 4435912)									
EM2212384-001	Murray Mouth	EK061G: Total Kjeldahl Nitrogen as N		0.1	mg/L	1.9	5.9	102	No Limit		
EM2212384-010	1.8km west of Salt Creek	EK061G: Total Kjeldahl Nitrogen as N		0.1	mg/L	5.4	5.1	4.3	No Limit		
EK067G: Total Phos	sphorus as P by Discrete A	nalyser (QC Lot: 4435911)									
EM2212384-001	Murray Mouth	EK067G: Total Phosphorus as P		0.01	mg/L	0.26	0.14	59.4	No Limit		
EM2212384-010	1.8km west of Salt Creek	EK067G: Total Phosphorus as P		0.01	mg/L	0.35	0.23	43.9	No Limit		
EP002: Dissolved O	rganic Carbon (DOC) (QC	Lot: 4440623)									
EM2212384-001	Murray Mouth	EP002: Dissolved Organic Carbon		1	mg/L	9	8	0.0	No Limit		
EM2212384-010	1.8km west of Salt Creek	EP002: Dissolved Organic Carbon		1	mg/L	30	29	0.0	0% - 20%		
EP005: Total Organ	ic Carbon (TOC) (QC Lot: 4	1440624)									
EM2212384-001	Murray Mouth	EP005: Total Organic Carbon		1	mg/L	6	6	0.0	No Limit		
EM2212384-010	1.8km west of Salt Creek	EP005: Total Organic Carbon		1	mg/L	35	35	0.0	0% - 20%		

Page : 4 of 6 Work Order : EM2212384

Client : Dept for Environment & Water
Project : HCHB Monitoring Program



Method Blank (MB) and Laboratory Control Sample (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.

ub-Matrix: WATER				Method Blank (MB)	Laboratory Control Spike (LCS) Report					
				Report	Spike	Spike Recovery (%)	Acceptable	Limits (%)		
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High		
K055G-SW: Ammonia as N by Discrete Analyser in Saline V	Water (QCLot:	4439188)								
K055G-SW: Ammonia as N	7664-41-7	0.02	mg/L	<0.02	0.5 mg/L	90.7	81.1	124		
A015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 4	439447)									
A015H: Total Dissolved Solids @180°C		10	mg/L	<10	2000 mg/L	99.2	91.0	110		
				<10	2460 mg/L	101	81.7	118		
				<10	293 mg/L	106	91.0	110		
A045: Turbidity (QCLot: 4435556)										
A045: Turbidity		0.1	NTU	<0.1	40 NTU	103	88.1	110		
D037P: Alkalinity by PC Titrator (QCLot: 4437094)										
D037-P: Total Alkalinity as CaCO3			mg/L		200 mg/L	95.7	85.0	116		
D045G: Chloride by Discrete Analyser (QCLot: 4435179)										
D045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	95.8	85.0	115		
				<1	1000 mg/L	99.6	85.0	122		
D045G: Chloride by Discrete Analyser (QCLot: 4435755)										
D045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	97.8	85.0	115		
				<1	1000 mg/L	101	85.0	122		
G052G: Silica by Discrete Analyser (QCLot: 4435177)										
G052G: Reactive Silica		0.05	mg/L	<0.05	5 mg/L	104	78.9	118		
G052G: Silica by Discrete Analyser (QCLot: 4435753)										
G052G: Reactive Silica		0.05	mg/L	<0.05	5 mg/L	104	78.9	118		
K057G: Nitrite as N by Discrete Analyser (QCLot: 4435178)									
K057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	100	90.9	112		
K057G: Nitrite as N by Discrete Analyser (QCLot: 4435754	3									
K057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	99.1	90.9	112		
K059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyse	er (OCL of: 4439	9189)			-					
K059G: Nitrite + Nitrate as N		0.01	mg/L	<0.01	0.5 mg/L	106	90.0	117		
K061G: Total Kjeldahl Nitrogen By Discrete Analyser(QCL	ot: 4435912)									
K061G: Total Kjeldahl Nitrogen as N		0.1	mg/L	<0.1	5 mg/L	97.6	70.0	117		
K067G: Total Phosphorus as P by Discrete Analyser (QCL				***	- · · · · · · ·					
K067G: Total Phosphorus as P by discrete Analyser (QCL) K067G: Total Phosphorus as P	ot: 4435911) 	0.01	mg/L	<0.01	2.21 mg/L	93.2	71.9	114		
			3	0.0.		55.2				
P002: Dissolved Organic Carbon (DOC) (QCLot: 4440623) P002: Dissolved Organic Carbon		1	mg/L	<1	100 mg/L	91.6	83.0	115		
Fuuz. Dissolved Organic Carbon		ı	my/L	~1	TOO HIIG/L	91.0	00.0	113		

Page : 5 of 6
Work Order : EM2212384

Client : Dept for Environment & Water
Project : HCHB Monitoring Program



Sub-Matrix: WATER		Method Blank (MB)	Laboratory Control Spike (LCS) Report								
				Report	Spike	Spike Recovery (%)	Acceptable	Limits (%)			
Method: Compound CAS No.	mber	LOR	Unit	Result	Concentration	LCS	Low	High			
EP005: Total Organic Carbon (TOC) (QCLot: 4440624) - continued											
EP005: Total Organic Carbon		1	mg/L	<1	100 mg/L	91.2	81.2	110			
EP008: Chlorophyll (QCLot: 4444339)											
EP008: Chlorophyll a		1	mg/m³	<1	20 mg/m³	97.3	70.0	130			
EP008: Pheophytin a		1	mg/m³	<1							
EP008: Chlorophyll (QCLot: 4446129)											
EP008B: Chlorophyll b		1	mg/m³	<1							

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			Matrix Spike (MS) Report					
				Spike	SpikeRecovery(%)	Acceptable L	imits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
EK055G-SW: Amm	nonia as N by Discrete Analyser in Saline Water(QCLot:	4439188)						
EM2212384-002	Mark Point	EK055G-SW: Ammonia as N	7664-41-7	0.5 mg/L	97.4	70.0	130	
ED045G: Chloride	by Discrete Analyser (QCLot: 4435179)							
EM2212384-002	Mark Point	ED045G: Chloride	16887-00-6	400 mg/L	# Not	70.0	142	
ED045C: Chlorida	by Discrete Analyser (QCLot: 4435755)				Determined			
EM2212384-004	Villa De Yumpa	ED045G: Chloride	16887-00-6	400 mg/L	# Not	70.0	142	
LIVI2212304-004	Villa De Tullipa	ED045G: Cnlonge	10007-00-0	400 mg/L	# Not Determined	70.0	142	
EG052G: Silica by	Discrete Analyser (QCLot: 4435177)							
EM2212384-002	Mark Point	EG052G: Reactive Silica		5 mg/L	99.6	80.0	120	
EG052G: Silica by	Discrete Analyser (QCLot: 4435753)							
EM2212384-004	Villa De Yumpa	EG052G: Reactive Silica		5 mg/L	91.7	80.0	120	
EK057G: Nitrite as	s N by Discrete Analyser (QCLot: 4435178)							
EM2212384-002	Mark Point	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	92.0	80.0	114	
EK057G: Nitrite as	s N by Discrete Analyser (QCLot: 4435754)							
EM2212384-004	Villa De Yumpa	EK057G: Nitrite as N	14797-65-0	0.5 mg/L	86.3	80.0	114	
EK059G: Nitrite p	lus Nitrate as N (NOx) by Discrete Analyser (QCLot: 443	39189)						
EM2212384-002	Mark Point	EK059G: Nitrite + Nitrate as N		0.5 mg/L	84.5	70.0	130	
EK061G: Total Kje	eldahl Nitrogen By Discrete Analyser (QCLot: 4435912)							
EM2212384-002	Mark Point	EK061G: Total Kjeldahl Nitrogen as N		5 mg/L	107	70.0	130	
EK067G: Total Pho	osphorus as P by Discrete Analyser (QCLot: 4435911)							

Page : 6 of 6
Work Order : EM2212384

Client : Dept for Environment & Water
Project : HCHB Monitoring Program



Sub-Matrix: WATER		Matrix Spike (MS) Report								
	Spike	SpikeRecovery(%)	Acceptable I	Limits (%)						
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High			
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 4435911) - continued										
EM2212384-002	Mark Point	EK067G: Total Phosphorus as P		1 mg/L	110	70.0	130			
EP002: Dissolved Organic Carbon (DOC) (QCLot: 4440623)										
EM2212384-002	Mark Point	EP002: Dissolved Organic Carbon		100 mg/L	115	75.0	117			
EP005: Total Organic Carbon (TOC) (QCLot: 4440624)										
EM2212384-002	Mark Point	EP005: Total Organic Carbon		100 mg/L	96.9	76.6	125			