

CERTIFICATE OF ANALYSIS

Work Order : EM2014780

Client : Dept for Environment & Water

Contact : Mr FRANK MANGERUCA

Address : GPO BOX 2834

ADELAIDE SA, AUSTRALIA 5001

Telephone : ---Project : HCHB
Order number : ----

C-O-C number : ----

Sampler : JOSHUA CASTLE

Site : ---

Quote number : AD/052/20 V2

No. of samples received : 19
No. of samples analysed : 19

Page : 1 of 10

Laboratory : Environmental Division Melbourne

Contact : Kieren Burns

Address : 4 Westall Rd Springvale VIC Australia 3171

Telephone : +61881625130

Date Samples Received : 27-Aug-2020 10:25

Date Analysis Commenced : 27-Aug-2020

Issue Date : 03-Sep-2020 14:32



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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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
Arenie Vijayaratnam	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Ashesh Patel	Senior Chemist	Sydney Inorganics, Smithfield, NSW
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Samantha Smith	Laboratory Coordinator	WRG Subcontracting, Springvale, VIC

Page : 2 of 10 Work Order : EM2014780

Client : Dept for Environment & Water

Project : HCHB

ALS

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.

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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

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
- ø = ALS is not NATA accredited for these tests.
- ~ = Indicates an estimated value.
- ED037-P: EM2014780 #16. Alkalinity has been confirmed via re-preparation and re-analysis.
- It is recognised that TOC is less than DOC for samples #12, #13, #16 and #18 . However, the difference is within experimental variation of the methods.
- EP008: Chlorophyll-a standard does not contained Pheophytin -a standard.
- EP008: LOR raised for Pheophytin-a due to sample matrix.
- EA015H: EM2014780 #1-3, #6, #9, #12: TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- ED045G: The presence of thiocyanate can positively contribute to the chloride result, thereby may bias results higher than expected. Results should be scrutinised accordingly.
- NR Reported in separate COA
- Algal Count (BM010) has been performed by ALS Water Resources Group, NATA Accreditation no. 992, Site no. 989.

Page : 3 of 10 Work Order : EM2014780

Client : Dept for Environment & Water

Project : HCHB

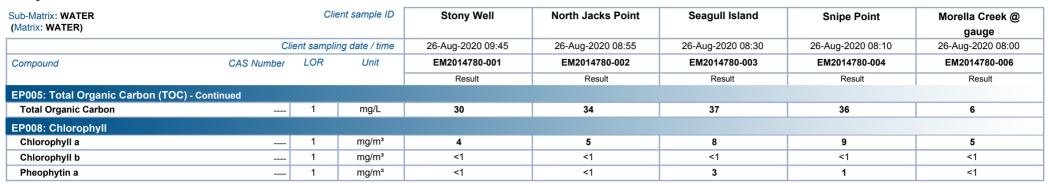




Page : 4 of 10 Work Order : EM2014780

Client : Dept for Environment & Water

Project : HCHB





Page : 5 of 10 Work Order : EM2014780

Client : Dept for Environment & Water

EA015: Total Dissolved Solids dried at 180 ± 5 °C

Client sample ID

Unit

mg/L

NTU

mg/L

Client sampling date / time

LOR

10

0.1

1

1

1

0.05

0.01

0.01

0.01

0.1

0.01

0.01

---- 0.1

CAS Number

DMO-210-001

3812-32-6

16887-00-6

7664-41-7

14797-65-0

14797-55-8

14265-44-2

71-52-3

Salt Creek Outlet

26-Aug-2020 07:25

EM2014780-007

Result

NR

79700

8.5

<1

<1

258

258

46200

1.03

< 0.02

< 0.01

< 0.01

< 0.01

3.7

3.7

0.88

< 0.01

31

1.8km west of Salt

Creek

26-Aug-2020 07:50

EM2014780-008

Result

NR

78000

8.3

<1

<1

249

249

48000

0.52

< 0.02

< 0.01

<0.01

< 0.01

3.7

3.7

1.01

< 0.01

31

3.2km south of Salt

Creek (land)

26-Aug-2020 07:30

EM2014780-009

Result

NR

97900

8.6

<1

<1

240

240

47800

0.11

< 0.02

< 0.01

<0.01

< 0.01

3.8

3.8

0.66

< 0.01

31

Tilley Swamp Drain

U/S Morella

26-Aug-2020 08:30

EM2014780-010

Result

NR

8780

2.9

<1

39

416

455

4210

9.06

0.10

0.02

0.33

0.35

0.6

1.0

<0.01

< 0.01

<1

Project : HCHB

Analytical Results

BM010: Algal Count
Algal Count

EA045: Turbidity
Turbidity

Chloride

Reactive Silica

Ammonia as N

Nitrite as N

Nitrate as N

Nitrite + Nitrate as N

^ Total Nitrogen as N

Total Phosphorus as P

Reactive Phosphorus as P

Dissolved Organic Carbon

EP002: Dissolved Organic Carbon (DOC)

Total Kjeldahl Nitrogen as N

Total Dissolved Solids @180°C

ED037P: Alkalinity by PC Titrator

Hydroxide Alkalinity as CaCO3

Carbonate Alkalinity as CaCO3

Total Alkalinity as CaCO3

Bicarbonate Alkalinity as CaCO3

ED045G: Chloride by Discrete Analyser

EK057G: Nitrite as N by Discrete Analyser

EK058G: Nitrate as N by Discrete Analyser

EK055G-SW: Ammonia as N by Discrete Analyser in Sea Water

EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser

EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser

EK061G: Total Kjeldahl Nitrogen By Discrete Analyser

EK067G: Total Phosphorus as P by Discrete Analyser

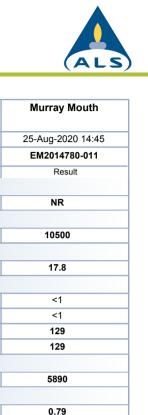
EK071G: Reactive Phosphorus as P by discrete analyser

EG052G: Silica by Discrete Analyser

Sub-Matrix: WATER

(Matrix: WATER)

Compound



0.15

0.01

0.01

0.02

1.1

1.1

0.06

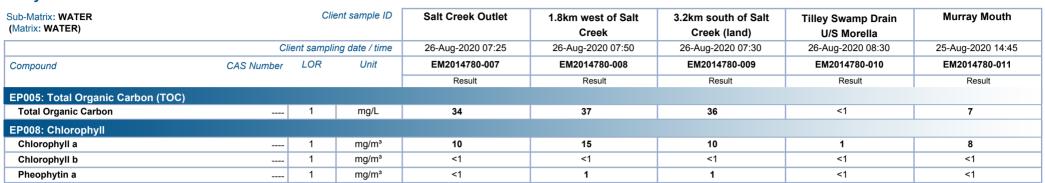
< 0.01

7

Page : 6 of 10 Work Order : EM2014780

Client : Dept for Environment & Water

Project : HCH





Page : 7 of 10 Work Order : EM2014780

Client : Dept for Environment & Water

Project : HCHB

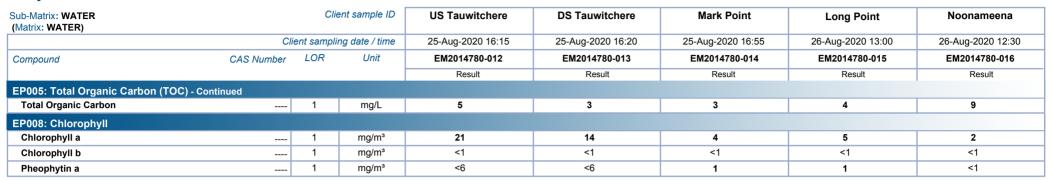




Page : 8 of 10 Work Order : EM2014780

Client : Dept for Environment & Water

Project : HCHB





Page : 9 of 10 : EM2014780 Work Order

: Dept for Environment & Water : HCHB Client

Project



ub-Matrix: WATER Matrix: WATER)		Clie	ent sample ID	Bonneys	McGrath Flat North	Parnka Point	Villa de Yumpa	
·	Client sampling date / time			26-Aug-2020 12:10	26-Aug-2020 10:00	26-Aug-2020 11:10	26-Aug-2020 10:15	
Compound CAS Nur	CAS Number	LOR	Unit	EM2014780-017	EM2014780-018	EM2014780-019	EM2014780-020	
				Result	Result	Result	Result	
BM010: Algal Count								
Algal Count		-	-	NR	NR	NR	NR	
EA015: Total Dissolved Solids dried	at 180 ± 5 °C							
Total Dissolved Solids @180°C		10	mg/L	40000	63300	61800	59900	
EA045: Turbidity								
Turbidity		0.1	NTU	2.0	10.5	6.5	5.6	
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	16	<1	<1	<1	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	175	226	203	204	
Total Alkalinity as CaCO3		1	mg/L	191	226	203	204	
ED045G: Chloride by Discrete Analys	ser							
Chloride	16887-00-6	1	mg/L	23700	34800	36400	37300	
EG052G: Silica by Discrete Analyser								
Reactive Silica		0.05	mg/L	0.07	0.44	<0.05	<0.05	
EK055G-SW: Ammonia as N by Disci	rete Analyser in Sea	Water						
Ammonia as N	7664-41-7		mg/L	0.03	0.03	<0.02	<0.02	
EK057G: Nitrite as N by Discrete An								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	
EK058G: Nitrate as N by Discrete An			3					
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	
EK059G: Nitrite plus Nitrate as N (No			g, =		5.5.			
Nitrite + Nitrate as N	DX) by Discrete Ana	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	
	Digarata Amelyaan	0.01	9, -	-0.01	-0.01	-0.01	-0.01	
EK061G: Total Kjeldahl Nitrogen By I Total Kjeldahl Nitrogen as N	Discrete Analyser	0.1	mg/L	1.9	2.6	2.9	3.1	
· ·	NOw have Discount and		mg/L	1.0	2.0	2.0	J. 1	
EK062G: Total Nitrogen as N (TKN + Notal Nitrogen as N	NOX) by Discrete An	0.1	ma/l	1.9	2.6	2.9	3.1	
		U. I	mg/L	1.3	۷.۵	4.3	J. I	
EK067G: Total Phosphorus as P by [Discrete Analyser	0.01	ma/l	0.00	0.20	0.20	0.20	
Total Phosphorus as P			mg/L	0.09	0.20	0.30	0.28	
EK071G: Reactive Phosphorus as P				40.04	40.04	40.04	40.04	
Reactive Phosphorus as P	14265-44-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	
EP002: Dissolved Organic Carbon (D								
Dissolved Organic Carbon		1	mg/L	10	19	17	17	

Page : 10 of 10 Work Order : EM2014780

Client : Dept for Environment & Water

Project : HCHB

