

CERTIFICATE OF ANALYSIS

Work Order : EW2200331 Client : Ingenia Holidays Merry Beach Contact : Manager (Reports & Invoice) Address : Merry Beach Road, Kioloa 2539 Telephone : 02 4457 1065 Project : Beach Monitoring - January 2022 Order number : P1806838 C-O-C number : ---- Sampler : Client Site : Merry Beach Quote number : ---- No. of samples received : 13 No. of samples analysed : 13	Page : 1 of 6 Laboratory : Environmental Division NSW South Coast Contact : Glenn Davies Address : 1/19 Ralph Black Dr, North Wollongong 2500 NSW Australia Telephone : +61 2 4225 3125 Date Samples Received : 24-Jan-2022 17:43 Date Analysis Commenced : 25-Jan-2022 Issue Date : 02-Feb-2022 17:07
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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 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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Clare Kennedy	Analyst	Inorganics, Fyshwick, ACT
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Somlok Chai	Microbiologist	Sydney Microbiology, Smithfield, NSW



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.

- **Analytical work for this work order will be conducted at ALS Sydney.**
- MF = membrane filtration
- CFU = colony forming unit
- Microbiological Comment: In accordance with ALS work instruction QWI-MIC/04, membrane filtration result is reported an approximate (~) when the count of colonies on the filtered membrane is outside the range of 10 - 100cfu.
- EK067G:LOR raised due to sample matrix.
- MW023 is ALS's internal code and is equivalent to AS4276.9.
- MW006 is ALS's internal code and is equivalent to AS4276.7.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)		Sample ID		884/Eff1	884/Eff2	884/SW1	884/SW2	884/SW3
Sampling date / time				24-Jan-2022 10:10	24-Jan-2022 11:55	24-Jan-2022 11:20	24-Jan-2022 10:50	24-Jan-2022 11:30
Compound	CAS Number	LOR	Unit	EW2200331-001	EW2200331-002	EW2200331-003	EW2200331-004	EW2200331-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.07	6.87	6.80	6.78	7.72
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	898	1160	2230
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	----	----	----
EK010-1: Chlorine								
Free Chlorine	----	0.02	mg/L	----	0.65	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.09	----	0.05	0.12	0.11
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	49.7	----	<0.01	0.23	2.60
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	6.6	----	7.0	1.6	4.4
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	56.3	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	10.3	----	<0.10	<0.05	0.65
EP030: Biochemical Oxygen Demand (BOD)								
Biochemical Oxygen Demand	----	2	mg/L	<2	----	3	2	4
MW006: Faecal Coliforms & E.coli by MF								
Faecal Coliforms	----	1	CFU/100mL	<1	----	180	2000	890
<i>Escherichia coli</i>	----	1	CFU/100mL	----	23000	----	----	----
MW023: Enterococci by Membrane Filtration								
Enterococci	----	1	CFU/100mL	----	----	140	300	51
EP020CA: Oil and Grease								
Oil and Grease	----	1	mg/L	<1	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	884/GW1	884/GW2	884/GW3	884/GW4	884/GW5
Sampling date / time			24-Jan-2022 11:00	24-Jan-2022 11:05	24-Jan-2022 11:10	24-Jan-2022 11:45	24-Jan-2022 11:50	
Compound	CAS Number	LOR	Unit	EW2200331-006	EW2200331-007	EW2200331-008	EW2200331-009	EW2200331-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	3.63	5.50	5.87	7.36	7.18
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	5870	574	573	518	1660
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.21	0.03	0.03	0.01	0.01
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.01	<0.01	0.01	0.10	0.34
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.5	3.9	2.1	1.1	0.4
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	----	2.1	1.2	0.7
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	<0.01	0.33	0.14	0.56	<0.01
EP030: Biochemical Oxygen Demand (BOD)								
Biochemical Oxygen Demand	----	2	mg/L	<2	<2	<2	<2	2
MW006: Faecal Coliforms & E.coli by MF								
Faecal Coliforms	----	1	CFU/100mL	<1	17	47	~300000	10
MW023: Enterococci by Membrane Filtration								
Enterococci	----	1	CFU/100mL	<1	~3	~80	1200	22



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	884/GW6	Influent	Spearwater FRONT BORE	----	----
Sampling date / time					24-Jan-2022 12:00	24-Jan-2022 10:00	24-Jan-2022 11:25	----	----
Compound	CAS Number	LOR	Unit		EW2200331-011	EW2200331-012	EW2200331-013	-----	-----
					Result	Result	Result	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		6.84	8.31	8.43	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		1700	----	3740	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		----	320	----	----	----
EA065: Total Hardness as CaCO3									
Total Hardness as CaCO3	----	1	mg/L		----	----	160	----	----
ED040T: Total Major Anions									
Silicon	7440-21-3	0.05	mg/L		----	----	6.73	----	----
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L		----	----	28	----	----
Magnesium	7439-95-4	1	mg/L		----	----	22	----	----
Sodium	7440-23-5	1	mg/L		----	----	706	----	----
Potassium	7440-09-7	1	mg/L		----	----	5	----	----
EG020T: Total Metals by ICP-MS									
Manganese	7439-96-5	0.001	mg/L		----	----	0.005	----	----
Iron	7439-89-6	0.05	mg/L		----	----	<0.05	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		<0.01	152	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.29	0.65	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		1.0	204	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		1.3	205	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		<0.01	27.5	----	----	----
EP030: Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	----	2	mg/L		<2	210	----	----	----
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL		~7	53000000	<1	----	----
<i>Escherichia coli</i>	----	1	CFU/100mL		----	53000000	<1	----	----
MW023: Enterococci by Membrane Filtration									



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	884/GW6	Influent	Spearwater FRONT BORE	----	----
Sampling date / time					24-Jan-2022 12:00	24-Jan-2022 10:00	24-Jan-2022 11:25	----	----
Compound	CAS Number	LOR	Unit		EW2200331-011	EW2200331-012	EW2200331-013	-----	-----
					Result	Result	Result	----	----
MW023: Enterococci by Membrane Filtration - Continued									
Enterococci	----	1	CFU/100mL		65	----	<1	----	----
EP020CA: Oil and Grease									
Oil and Grease	----	1	mg/L		----	91	----	----	----

Inter-Laboratory Testing

Analysis conducted by ALS Canberra, NATA accreditation no. 992.

(WATER) EP020CA: Oil and Grease

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(WATER) EA005P: pH by PC Titrator

(WATER) EP030: Biochemical Oxygen Demand (BOD)

(WATER) EK055G: Ammonia as N by Discrete Analyser

(WATER) MW006: Faecal Coliforms & E.coli by MF

(WATER) EK067G: Total Phosphorus as P by Discrete Analyser

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

(WATER) EK061G: Total Kjeldahl Nitrogen By Discrete Analyser

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

(WATER) EA025: Total Suspended Solids dried at 104 ± 2°C

(WATER) EK010-1: Chlorine

(WATER) EA010P: Conductivity by PC Titrator

(WATER) MW023: Enterococci by Membrane Filtration

(WATER) ED093F: Dissolved Major Cations

(WATER) EA065: Total Hardness as CaCO3

(WATER) ED040T: Total Major Anions

(WATER) EG020T: Total Metals by ICP-MS