ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EW2000329**	Page	: 1 of 5
Client	: **MERRY BEACH CARAVAN PARK**	Laboratory	: Environmental Division NSW South Coast
Contact	: David Jansen	Contact	: Glenn Davies
Address	: Merry Beach Rd Kioloa NSW 2539	Address	: 1/19 Ralph Black Dr, North Wollongong 2500 4/13 Geary Pl, North Nowra 2541 Australia NSW Australia
Telephone	: ----	Telephone	: +61 2 4225 3125
Project	: Merry Beach Monitoring	Date Samples Received	: 22-Jan-2020 16:23
Order number	: P0501061	Date Analysis Commenced	: 22-Jan-2020
C-O-C number	: ----	Issue Date	: 04-Feb-2020 15:52
Sampler	: ----		
Site	: Merry Beach		
Quote number	: WO/010/16		
No. of samples received	: 12		
No. of samples analysed	: 12		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ashesh Patel	Senior Chemist	Sydney Inorganics, Smithfield, NSW
Geetha Ramasundara	Chemistry Teamleader	Inorganics, Fyshwick, ACT
Glenn Davies	Environmental Services Representative	Laboratory - Wollongong, NSW
Sarah Griffiths	Microbiologist	Sydney Microbiology, Smithfield, NSW

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.

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.

- 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.
- Microbiological Comment: According to ALS work instruction for membrane filtration, the suggested volume for filtration of non-treated / non-drinking water starts from 50 mL if the sample is turbid. A result of <2 cfu/100 mL is reported when there is no target organism growth from a volume of 50 mL. It may be informative to record this fact.

  Microbiological Comment: The samples were tested out of holding time. It may be informative to record this fact.
- Microbiological Comment: Membrane filtration results are reported as estimate (~) due to the presence of many non-target organism colonies that may have inhibited the growth of the target organisms on the filter membrane. It may be informative to record this fact.
- EP030 : The residue DO is less than 1 mg/L for sample 12, this indicates that the sample has not been diluted enough. The result reported is estimated from the greatest dilution.
- EW2000329-003: A sample was not able to be taken for analysis due to the site being dry.
- Field data supplied by ALS Wollongong.
- MW023 is ALS's internal code and is equivalent to AS4276.9.
- MW006 is ALS's internal code and is equivalent to AS4276.7.

Analytical Results

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

Compound	CAS Number	LOR	Unit	Client sample ID	884/Eff1	884/Eff2	884/SW1	884/SW2	884/SW3
				Client sampling date / time	22-Jan-2020 09:40	22-Jan-2020 09:45	22-Jan-2020 09:50	22-Jan-2020 09:55	22-Jan-2020 10:00
					EW2000329-001	EW2000329-002	EW2000329-003	EW2000329-004	EW2000329-005
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		**7.85**	**7.87**	----	**7.54**	**7.73**
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		----	----	----	**2300**	**3100**
EA025: Suspended Solids									
Suspended Solids (SS)	----	5	mg/L		----	**16**	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		<5	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		**0.77**	----	----	**1.13**	**0.51**
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		**29.5**	----	----	**0.03**	**0.04**
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**3.9**	----	----	**3.3**	**2.8**
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		**33.4**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		**6.29**	----	----	**0.33**	**0.81**
EN67 PK: Field Tests									
Field Observations	----	0.01	--		----	----	**DRY**	----	----
EP030: Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	----	2	mg/L		<2	----	----	**4**	**7**
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL		**1300**	----	----	**3200**	**370**
Escherichia coli	----	1	CFU/100mL		----	**3300**	----	----	----
MW023: Enterococci by Membrane Filtration									
Enterococci	----	1	CFU/100mL		----	----	----	**4000**	**880**
EP020CA: Oil and Grease									
Oil and Grease	----	1	mg/L		<1	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	884/GW1	884/GW2	884/GW3	884/GW4	884/GW5
			Client sampling date / time	22-Jan-2020 10:10	22-Jan-2020 10:25	22-Jan-2020 11:00	22-Jan-2020 10:40	22-Jan-2020 11:10
Compound	CAS Number	LOR	Unit	EW2000329-006	EW2000329-007	EW2000329-008	EW2000329-009	EW2000329-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	4.64	6.29	6.36	7.72	7.23
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	5740	656	658	3740	1020
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.51	2.88	2.90	0.05	0.11
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.03	0.02	0.04	9.99	0.46
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.9	3.1	4.4	2.1	1.3
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.23	0.24	0.42	3.63	0.34
EP030: Biochemical Oxygen Demand (BOD)								
Biochemical Oxygen Demand	----	2	mg/L	<2	4	13	<2	<2
MW006: Faecal Coliforms & E.coli by MF								
Faecal Coliforms	----	1	CFU/100mL	<2	~<1	~4200	660	~2800
MW023: Enterococci by Membrane Filtration								
Enterococci	----	1	CFU/100mL	<2	~2000000	~1300000	80	16

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	884/GW6	Influent	----	----	----
			Client sampling date / time	22-Jan-2020 11:25	22-Jan-2020 09:42	----	----	----
Compound	CAS Number	LOR	Unit	EW2000329-011	EW2000329-012	--------	--------	--------
				Result	Result	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.22	7.95	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	1670	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	----	3880	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.34	17.6	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	2.13	0.10	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.6	226	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	226	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.19	131	----	----	----
EP030: Biochemical Oxygen Demand (BOD)								
Biochemical Oxygen Demand	----	2	mg/L	7	156	----	----	----
MW006: Faecal Coliforms & E.coli by MF								
Faecal Coliforms	----	1	CFU/100mL	~6	6800000	----	----	----
Escherichia coli	----	1	CFU/100mL	----	6800000	----	----	----
MW023: Enterococci by Membrane Filtration								
Enterococci	----	1	CFU/100mL	32	----	----	----	----
EP020CA: Oil and Grease								
Oil and Grease	----	1	mg/L	----	<1	----	----	----