



CERTIFICATE OF ANALYSIS

Work Order	: ES2320682	Page	: 1 of 11
Client	: DEPARTMENT OF PLANNING AND ENVIRONMENT (NSW-DPE)	Laboratory	: Environmental Division Sydney
Contact	: OEH	Contact	: Customer Services ES
Address	: [REDACTED] Lidcombe 2141	Address	: [REDACTED]
Telephone	: ----	Telephone	: [REDACTED]
Project	: 20230200	Date Samples Received	: 21-Jun-2023 16:00
Order number	: 4500806025	Date Analysis Commenced	: 22-Jun-2023
C-O-C number	: ----	Issue Date	: 28-Jun-2023 16:48
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 45		
No. of samples analysed	: 45		



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.

Signatories

Position

Accreditation Category

[REDACTED]

Senior Chemist - Inorganics

Sydney Inorganics, 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 Contract 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.

- EK271A-CM: Samples for Ultra-Trace Reactive Phosphorus by FIA should be frozen upon sampling. If not, low-level results (below 0.01 mg/L) may bias low.
- EK267PA-CM: Insufficient sample has been provided for Total Phosphorus on sample 2. Where applicable LOR values have been adjusted accordingly.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				MFK - Z - B1 - Filtered 1 234677	MFK - Z - B1 - Filtered 2 234678	MFK - Z - B1 - Unfiltered 1 234679	MFK - Z - B2 - Filtered 1 234680	MFK - Z - B2 - Filtered 2 234681
Sampling date / time				06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00
Compound	CAS Number	LOR	Unit	ES2320682-001	ES2320682-002	ES2320682-003	ES2320682-004	ES2320682-005
				Result	Result	Result	Result	Result
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	0.006	----	----	0.073	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	0.007	0.003	0.004	0.006	0.005
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.01	mg/L	----	0.69	1.21	----	0.74
EK262A: Total Nitrogen								
Total Nitrogen as N	----	0.01	mg/L	----	0.69	1.21	----	0.74
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	----	<0.010	0.102	----	0.111
EK271A: Reactive Phosphorus								
Reactive Phosphate	14625-44-2	0.001	mg/L	0.006	----	----	0.188	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				MFK - Z - B2 - Unfiltered 1 234682	MFK - Z - B3 - Filtered 1 234683	MFK - Z - B3 - Filtered 2 234684	MFK - Z - B3 - Unfiltered 1 234685	MFK - Z - E1 - Filtered 1 234686
Sampling date / time				06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00
Compound	CAS Number	LOR	Unit	ES2320682-006	ES2320682-007	ES2320682-008	ES2320682-009	ES2320682-010
				Result	Result	Result	Result	Result
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	0.010	----	----	0.061
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	0.007	0.004	0.015	0.005	0.025
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.01	mg/L	1.11	----	0.54	0.88	----
EK262A: Total Nitrogen								
Total Nitrogen as N	----	0.01	mg/L	1.12	----	0.55	0.89	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	0.160	----	0.265	0.347	----
EK271A: Reactive Phosphorus								
Reactive Phosphate	14625-44-2	0.001	mg/L	----	0.723	----	----	0.192



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				MFK - Z - E1 - Filtered 2 234687	MFK - Z -E1 - Unfiltered 1 234688	MFK - Z - E2 - Filtered 1 234689	MFK - Z - E2 - Filtered 2 234690	MFK - Z -E2 - Unfiltered 1 234691
Sampling date / time				06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00
Compound	CAS Number	LOR	Unit	ES2320682-011	ES2320682-012	ES2320682-013	ES2320682-014	ES2320682-015
				Result	Result	Result	Result	Result
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	----	0.110	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	0.016	0.017	0.044	0.036	0.036
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.01	mg/L	0.73	1.10	----	0.78	0.98
EK262A: Total Nitrogen								
Total Nitrogen as N	----	0.01	mg/L	0.75	1.12	----	0.82	1.02
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	0.143	0.159	----	0.120	0.165
EK271A: Reactive Phosphorus								
Reactive Phosphate	14625-44-2	0.001	mg/L	----	----	0.207	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				MFK - Z - E3 - Filtered 1 234692	MFK - Z - E3 - Filtered 2 234693	MFK - Z - E3 - Unfiltered 1 234694	MFK - Z - E4 - Filtered 1 234695	MFK - Z - E4 - Filtered 2 234696
Sampling date / time				06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00
Compound	CAS Number	LOR	Unit	ES2320682-016	ES2320682-017	ES2320682-018	ES2320682-019	ES2320682-020
				Result	Result	Result	Result	Result
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	0.115	----	----	0.137	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	0.062	0.053	0.056	0.062	0.061
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.01	mg/L	----	0.81	1.20	----	0.84
EK262A: Total Nitrogen								
Total Nitrogen as N	----	0.01	mg/L	----	0.86	1.26	----	0.90
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	----	0.112	0.174	----	0.097
EK271A: Reactive Phosphorus								
Reactive Phosphate	14625-44-2	0.001	mg/L	0.190	----	----	0.150	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				MFK - Z -E4- Unfiltered 1 234697	MFK - Z - E5 - Filtered 1 234698	MFK - Z - E5 - Filtered 2 234699	MFK - Z -E5 - Unfiltered 1 234700	MFK - BW - B2 - Filtered 1 234701
Sampling date / time				06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00
Compound	CAS Number	LOR	Unit	ES2320682-021	ES2320682-022	ES2320682-023	ES2320682-024	ES2320682-025
				Result	Result	Result	Result	Result
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	0.071	----	----	0.219
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	0.062	0.050	0.049	0.050	0.010
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.01	mg/L	1.16	----	0.72	1.22	----
EK262A: Total Nitrogen								
Total Nitrogen as N	----	0.01	mg/L	1.22	----	0.77	1.27	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	0.189	----	0.155	0.224	----
EK271A: Reactive Phosphorus								
Reactive Phosphate	14625-44-2	0.001	mg/L	----	0.305	----	----	0.238



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				MFK - BW - B2 - Filtered 2 234702	MFK - BW - B2 - Unfiltered 234703	MFK - BW - B3 - Filtered 1 234704	MFK - BW - B3 - Filtered 2 234705	MFK - BW - B3 - Unfiltered 234706
Sampling date / time				06-Jun-2023 00:00				
Compound	CAS Number	LOR	Unit	ES2320682-026	ES2320682-027	ES2320682-028	ES2320682-029	ES2320682-030
				Result	Result	Result	Result	Result
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	----	0.010	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	0.010	0.009	0.006	0.008	0.006
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.01	mg/L	1.11	1.43	----	0.69	1.12
EK262A: Total Nitrogen								
Total Nitrogen as N	----	0.01	mg/L	1.12	1.44	----	0.70	1.13
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	0.148	0.248	----	0.295	0.419
EK271A: Reactive Phosphorus								
Reactive Phosphate	14625-44-2	0.001	mg/L	----	----	0.634	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				MFK - BW - E1 - Filtered 1 234707	MFK - BW - E1 - Filtered 2 234708	MFK - BW - E1 - Unfiltered 234709	MFK - BW - E2- Filtered 1 234710	MFK - BW - E2- Filtered 2 234711
Sampling date / time				06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00
Compound	CAS Number	LOR	Unit	ES2320682-031	ES2320682-032	ES2320682-033	ES2320682-034	ES2320682-035
				Result	Result	Result	Result	Result
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	0.077	----	----	0.130	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	0.033	0.018	0.020	0.045	0.035
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.01	mg/L	----	0.90	1.28	----	0.96
EK262A: Total Nitrogen								
Total Nitrogen as N	----	0.01	mg/L	----	0.92	1.30	----	1.00
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	----	0.129	0.191	----	0.154
EK271A: Reactive Phosphorus								
Reactive Phosphate	14625-44-2	0.001	mg/L	0.215	----	----	0.234	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				MFK - BW - E2 - Unfiltered 234712	MFK - BW - E3 - Filtered 1 234713	MFK - BW - E3 - Filtered 2 234714	MFK - BW - E3 - Unfiltered 234715	MFK - BW - E4- Filtered 1 234716
Sampling date / time				06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00
Compound	CAS Number	LOR	Unit	ES2320682-036	ES2320682-037	ES2320682-038	ES2320682-039	ES2320682-040
				Result	Result	Result	Result	Result
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	0.167	----	----	0.156
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	0.038	0.057	0.057	0.056	0.062
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.01	mg/L	1.21	----	1.05	1.35	----
EK262A: Total Nitrogen								
Total Nitrogen as N	----	0.01	mg/L	1.25	----	1.11	1.41	----
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	0.208	----	0.123	0.251	----
EK271A: Reactive Phosphorus								
Reactive Phosphate	14625-44-2	0.001	mg/L	----	0.229	----	----	0.184



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				MFK - BW - E4- Filtered 2 234717	MFK - BW - E4 - Unfiltered 234718	MFK - BW - E5 - Filtered 1 234719	MFK - BW - E5 - Filtered 2 234720	MFK - BW - E5 - Unfiltered 234721
Sampling date / time				06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00	06-Jun-2023 00:00
Compound	CAS Number	LOR	Unit	ES2320682-041	ES2320682-042	ES2320682-043	ES2320682-044	ES2320682-045
				Result	Result	Result	Result	Result
EK255A: Ammonia								
Ammonia as N	7664-41-7	0.005	mg/L	----	----	0.087	----	----
EK259A: Nitrite and Nitrate (NOx)								
Nitrite + Nitrate as N	----	0.002	mg/L	0.062	0.062	0.054	0.054	0.051
EK261A: Total Kjeldahl Nitrogen								
Total Kjeldahl Nitrogen as N	----	0.01	mg/L	1.01	1.39	----	0.88	1.17
EK262A: Total Nitrogen								
Total Nitrogen as N	----	0.01	mg/L	1.07	1.45	----	0.93	1.22
EK267A: Total Phosphorus (Persulfate Digestion)								
Total Phosphorus as P	----	0.005	mg/L	0.124	0.211	----	0.160	0.291
EK271A: Reactive Phosphorus								
Reactive Phosphate	14625-44-2	0.001	mg/L	----	----	0.375	----	----