

EPL343 Monitoring Report

Top Croc NT Crocodile Farm

Reporting period 13 September 2023 – 30 September 2024

Top Organic Enterprises Pty Ltd

30 September 2024

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1. Introduction

Top Organics Enterprises Pty Ltd (Top Organics) operate the Top Croc NT Pty Ltd (TCNT) Crocodile Farm in Berry Springs, comprising a small crocodile farm and abattoir for the raising and processing of crocodiles for skins and meat. TCNT's operations result in the generation of animal effluent, a listed waste under Schedule 2 of the Waste Management and Pollution Control (Administration) Regulations. In accordance with the requirements of the NT Waste Management and Pollution Control Act 1974, TCNT operates under Environmental Protection Licence (EPL) 343 to address the ongoing production and management of animal effluent.

TCNT's EPL343 permits the discharge of wastewater from operations during the wet season. As per Condition 51 of EPL343, TCNT are required to undertake water quality monitoring which is reported in an annual Monitoring Report.

As a requirement of this licence, Top Organics has implemented and maintained a Monitoring Plan as shown in Section 7 of Attachment A of EPL343 on commencement date 13 September 2022.

The environmental monitoring requirements documented in EPL343 prescribe the following:

- Quarterly groundwater sampling
- Three surface water sampling events
- Sampling of wastewater monthly when discharging and quarterly when not discharging.

This Monitoring Report covers all water quality monitoring undertaken for the reporting period starting 13 September 2023 and ending September 2024 herein referred to as the 'reporting period'.

2. Purpose and scope

This Monitoring Report is prepared in accordance with the following EPL343 conditions:

Condition 51

The licensee must complete and provide to the NT EPA a Monitoring Report, as prescribed by this licence

Condition 52

The licensee must ensure that each Monitoring Report:

52.1 is prepared in accordance with the requirements of the NT EPA 'Guideline for Reporting on Environmental Monitoring';

52.2 includes a tabulation of all monitoring data required as a condition of this licence;

52.3 calculations for maximum total annual loads of Nitrogen and Phosphorus required as a condition of this licence;

52.4 reports on all trigger value exceedances and investigations required as a condition of this licence;

52.5 includes long term trend analysis of monitoring data to demonstrate any environmental impact associated with the activity over a minimum period of three years (where the data is available);

and

52.6 includes an assessment of environmental impact from the activity.

3. EPL343 compliance monitoring and reporting

EPL343 authorises wastewater discharge to land from the authorised discharge point WSPO (see Figure 1) on the eastern corner of the onsite Waste Stabilisation Pond (WSP), located centrally along the property's northern boundary (latitude -12.76854 longitude 130.98158). During the wet season, the WSP discharges during heavy rainfall events over the boundary following natural drainage contours towards the Darwin River, 210 m to the east.

To monitor potential environmental impacts from this activity, surface water, groundwater and wastewater quality monitoring has been undertaken in accordance with Attachment A of EPL343 and all monitoring related conditions of the licence (i.e., Conditions 36 to 41).

Water quality monitoring has been undertaken in accordance with the Environmental Monitoring Plan in Section 7 of the Supporting Information Report (ENVR 2022), and onsite and offsite monitoring locations are shown in Figure 2 and Figure 3. Table 2, Table 3 and Table 5 lists the required water quality parameters to be measured, the frequency of sampling and the trigger values for determining compliance. All monitoring laboratory analysis results are shown in Table 5 to Table 8.





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ENVR SOLUTIONS PTY. LTD.
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BRISBANE, AUSTRALIA.
PHONE: 0402 524 033
A.B.N: 946 583 81170

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SITE MONITORING LOCATIONS





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18 HUTTON ROAD,
ARANA HILLS, QLD, 4054.
BRISBANE, AUSTRALIA.
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OFFSITE
MONITORING
LOCATIONS

4. Site setting

4.1 Site location

TCNT is located in Berry Springs, approximately 45 km south of Darwin CBD. The site adjoins both Reedbeds and Old Bynoe Road and is immediately adjacent the western boundary of the Darwin River, described as a perennial stream showing low inter-annual variability and has historically shown no more than occasional zero flow days. Nearby and surrounding land uses include small to medium scale horticulture, rural living development at densities consistent with both Zones R (Rural) and Zone RL (Rural Living), domestic livestock, agriculture (primarily cattle grazing), recreation and accommodation (primarily comprising the Darwin River Tavern and associated retail and camping areas) and natural areas. A general layout and location of the site is provided in Figure 1.

4.2 Climate

The site experiences hot and humid conditions with an annual wet-dry monsoon, with the surrounding vegetation classified as Tropical Savannah. The wet season is from October to April and the dry season spans the remainder of the year. During the wet season, the area comes under the sporadic influence of convective thunderstorms, the monsoon and intense rainfall depressions resulting from tropical cyclones. Convective thunderstorms typically occur in the period from October to December, locally known as the “Build-up” season. The dry season extends from May to September and is characterised by lower humidity and very little to almost no rainfall.

4.3 Hydrology and hydrogeology

Surface water flow on the property generally flows slightly downgradient northeast to east along gently sloping flats and minor pronounced gullies towards the eastern boundary of the property. It is generally assumed that groundwater flow also follows this direction.

The property’s western boundary adjoins a declared quarantine area to manage a Cabomba (*Cabomba caroliniana*) weed outbreak, which extends 5 m landward from the water edge of the Darwin River.

Berry Springs is located within the Darwin and Blackmore Rivers Catchment area, and the major hydrogeological feature of the area is the fault bounded sedimentary basin which has an area of approximately 90 km². The major aquifer in the basin is known as the Berry Springs Dolostone Aquifer System, a small, localised aquifer that underlies parts of the Berry Springs and Darwin River areas.

The Berry Springs Dolomite is a typical karstic aquifer allowing rapid flow of water through fractures, with secondary porosity and permeability through the chemically weathered carbonates. On a local scale, groundwater travels via preferential pathways determined by the presence and extent of fracturing and typically drains to the northeast by both surface flow via springs and subsurface flow.

4.4 Soils and geology

The major soil classification within the property is kandosols with nil to low level season inundation. Often referred to as red, yellow, and brown earths, these massive and earthy soils are mostly well drained and permeable. Kandosols are important for agricultural and horticultural production in the Berry Springs locale, however grazing lands can be susceptible to surface soil degradation such as hard setting and crusting.

5. TCNT operations and overview

5.1 Farm operations

The crocodile production process is summarised as follows:

- There is a breeding and hatching program on site.
- Farming operations source juvenile crocodiles from other farms within the Darwin region, which are raised in large communal hatchling ponds.
- When animals grow to approximately 1.2 m, they are transferred to individual finishing pens where they are housed until they are ready for harvesting.
- Animals are harvested from the finishing pens and euthanised onsite on an adhoc, as needed basis. The animal is then taken to the small onsite abattoir where the skin is then removed for export and the carcass filleted of meat which is then sold for restaurant cuisine or as pet meat.
- The farm currently contains approximately 1,000 crocodiles.

The extent of existing crocodile farming operations comprises:

- Three groups of crocodile pens in shallow (less than 0.5 metres deep) PVC-lined channels. Each channel is approximately 24 metres long and 1-2 metres wide, with the channels segmented into individual pens, and the channels completely enclosed, with 5-sided chainmesh and shade cloth covering.
- The pens are located within the existing fenced crocodile enclosure.
- A small ancillary abattoir (11.6m²) which currently process crocodiles from the farm for skins and meat. Skins are the primary product and are processed for wholesale and export, for manufacture into leather goods. Meat is processed for human and animal (pet meat) consumption.
- All ancillary components of the farm including the workshop and storage areas (also associated with the ongoing horticultural components), cold storage and machinery.

There is no irrigation using wastewater on crops on site.

6. Water supply

A single domestic bore (RN 034907) provides groundwater for site operations. Top Organics holds a groundwater extraction license (Licence No. BSGS10040), with a total maximum extraction allowance of 63 ML/year, 60 ML of which is allocated to agriculture and 3 ML to aquaculture.

TCNT manages supply of water into the pens by following a 'drop and fill' process where water is manually fed into each row of pens by use of ball valve control, on an as needed basis.

7. Wastewater flows and monitoring

Wastewater effluent discharged from all pen enclosures flows into an unlined drainage channel running along the northern boundary of the property. The channel drains wastewater east where it is collected in a WSP measures approximately 20 m x 40 m x 2 m deep and has approximately 1 ML of holding capacity.

The WSP operates as a facultative treatment pond with distinctive and stratified aerobic and anaerobic zones. The WSP features a floating curtain wall which improves flow distribution and retention time of the wastewater.

Throughout the majority of the year, water is lost from the WSP via high rates of evaporation, and some water is lost to exfiltration. During the wet season, the WSP will discharge during heavy rainfall events from a combination of surface flow water, groundwater infiltration and rainwater entering the WSP and filling up the storage volume.

During discharge events, water flows over a concrete open channel on the eastern outfall the WSP into the neighbouring property to the north, and flows through natural drainage contours towards the Darwin River, 210 m to the east. All discharges are passive with a significant proportion of the coming from overland stormwater flow collecting into the WSP. To monitor and record discharge events, the open concrete channel has been fitted with a 'Greyline AVFM 6.1' submersible ultrasonic sensor (manufactured by Pulsar Measurement) secured to the base of the channel which measures discharge flow volume and records and saves all data in 30 second timestamps.

Wastewater from the abattoir discharges into two separate plastic and concrete septic tanks of a combined volume of 7,000 L allowing for 14 days hydraulic retention time (HRT) on an estimated daily discharge of 500 L/day. Primary clarified effluent exiting the septic tank is gravity fed into two soil absorption trenches where it is percolated into the soil and renovated via naturally occurring biogeochemical processes within the soil matrix.

Due to a malfunction of the Greyline AVFM 6.1 Ultrasonic flow monitor, the measurement of water volume, velocity and duration of each discharge event was unable to be recorded during this reporting period. More information on this is provided in Section 8.1 below.

8. Rainfall, discharges and water usage

Figure 4 shows monthly rainfall totals taken from the Territory Wildlife Park BoM station 14264 for the reporting period. Average monthly rainfall totals have also been shown for comparison. Rainfall was above average for the middle of the wet season, and below average during the beginning and the end of the wet season during the reporting period.

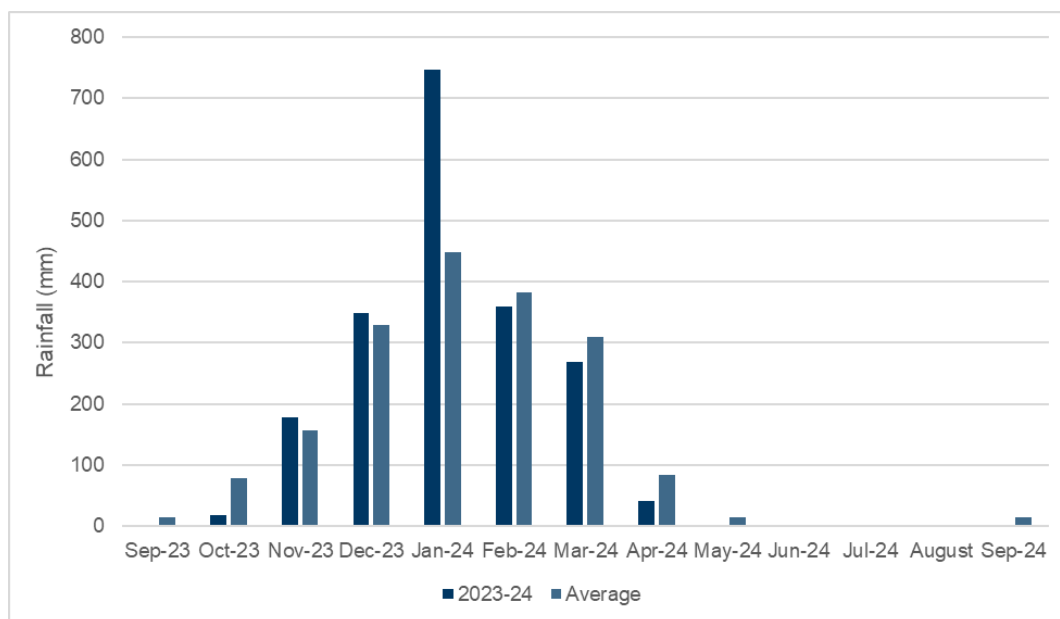


Figure 4 Monthly rainfall totals from September 2023 to September 2024 (BoM Station 14264)

8.1 Reporting period discharge details

During the 2023-2024 reporting period, wastewater discharges were unable to be recorded by the Greyline AVFM 6.1 submersible ultrasonic sensor due to damage to the sensor, possibly from lightning strike. Corrective actions to repair the equipment are underway. Discharges will continue to be calculated once the equipment is repaired and will be reported the next monitoring report.

8.2 Groundwater usage

There is a single groundwater bore (RN034907) onsite which provides groundwater for site operations. TCNT holds a groundwater extraction license (Licence No. BSGS10040), with a total maximum extraction allowance of 63 ML/year, 60 ML of which is allocated to agriculture and 3 ML to aquaculture. Table 1 provides calculated usage during the reporting period.

No standing water levels have been able to be recorded since the commencement of monitoring. Access to the bore will need to be assessed to determine the standing water levels.

Table 1 Groundwater usage during the reporting period

Reading date	Previous Meter Reading (M ³)	Current Meter Reading (M ³)	Calculated Usage (ML)
02/09/2024	92126	95408	3.282
30/07/2024	89998	92126	2.128
02/07/2024	87813	89998	2.185
30/05/2024	86475	87813	1.338
6/05/2024	85059	86475	1.416
3/04/2024	83426	85059	1.633
30/01/2024	82629	83426	0.797
3/01/2024	81463	82629	1.166
30/11/2023	80144	81463	1.319
30/10/2023	78556	80144	1.588
2/10/2023	76073	78556	2.483

9. Monitoring undertaken

During the reporting period, monitoring was undertaken as per EPL343 requirements using the methods outlined in the TCNT Supporting Information Report (ENVR 2022)

9.1 Monitoring locations

The onsite and offsite sampling locations for wastewater and surface water are shown in Figures 2 and 3. Groundwater samples were collected from the single groundwater bore (RN 034907), currently supplying water to the farm operations.

Wastewater samples were taken from the drainage channel containing water entering the WSP (TCNT-IN), and then at the outlet of the concrete culvert containing the Pulsar Greyline AVFM 6.1 ultrasonic flow monitor (TCNT-OUT) (latitude -12.76854 longitude 130.98158).

Access to the Darwin River directly to east of the property for sample collection is prohibited due to the property adjoining a quarantine zone for the management of Cabomba weed. Therefore, samples have been collected from the drainage channel running parallel to the northern boundary of the farm 6 m from the water edge of the Darwin River (SW3).

Additional samples were collected from the drainage channel from two further locations: upgradient of the TCNT property from a drainage channel that contains runoff from the roadside of Reedsbeds Road and neighbouring properties (SW1) and the drainage channel further downgradient of SW1, adjacent to the WSP (SW2).

Surface water samples were collected upstream of Darwin River on the southern side of the causeway intersecting Darwin River on Old Bynoe Road before the River passes the TCNT property, which is not within the quarantine zone (SW4).

9.2 Monitoring frequency, parameters, guidelines and trigger values

The TCNT Environmental Monitoring Plan (ENVR, 2022) documents the assessment criteria for surface water and groundwater which are based on the Darwin Harbour Water Quality Objectives (DHWQO) (DNRETAS, 2010). These criteria are referred to as Trigger Values and provide the basis upon which non-conformances with the EPL are based. These assessment criteria are provided in Section 9.2.1 to 9.2.3 below. EPL343 also states additional conditions of non-compliance and are provided below:

A non-compliance with this licence includes:

- 45.1 an exceedance of a trigger value as specified in Table 7.4 of Attachment A, at Surface Water Monitoring Point 3 on three consecutive sampling occasions;
- 45.2 an exceedance of three times or more a trigger value as specified in Table 7.4 of Attachment A, at Surface Water Monitoring Point 3 on a single sampling occasion;
- 45.3 an exceedance of a trigger value as specified in Table 7.5 of Attachment A, on three consecutive sampling occasions at the Groundwater Monitoring Point;
- 45.4 an exceedance of three times or more a trigger value as specified in Table 7.5 of Attachment A, on a single sampling occasion at the Groundwater Monitoring Point.

9.2.1 Surface water

The Darwin Harbour Water Quality Objectives for freshwater rivers and streams have been used as guidance for trigger values (Table 2) for water that is monitored in the ephemeral stream and Darwin River.

Surface water monitoring was undertaken at four locations across the TCNT site, and was undertaken during the wet season when the WSP was discharging, surface water run-off was occurring and Darwin River was flowing.

The monitoring parameters, frequencies and trigger values for surface water sampling are outlined in Table 2.

Table 2 Monitoring parameters, frequencies and trigger values for surface waters

Parameter	Sampling Frequency	Trigger value
pH	3 times during the wet season (start, during and end)	6.0 – 7.5
EC		<200µS/cm
Total P		<0.01 mg/L
Total N		<0.23 mg/L
NOx		<0.008 mg/L
E. coli, Enterococci, Total coliforms		<200 cfu/100mL

9.2.2 Groundwater

Groundwater quality has been compared against the trigger values in Table 3.

The listed trigger values have been adopted from the Darwin Harbour Water Quality Objectives for Groundwater. Groundwater monitoring is undertaken from the single bore that services TCNT operations.

Table 3 Monitoring parameters, frequencies and trigger values for groundwater

Parameter	Sampling Frequency	Trigger value
pH	Quarterly	7.0 – 8.5
EC		400 µS/cm
Total P		Any increase from the previous monitoring round
Total N		
E. coli, Enterococci, Total coliforms		
Major Cations and anions		>200cfu/100mL

Groundwater usage	Monthly	-
Standing Water Level (SWL)	Monthly	

9.2.3 Wastewater

Wastewater monitoring was undertaken during the monitoring period, and the monitoring parameters and frequencies of sampling for both the inlet and outlet of the WSP are outlined in Table 4. The wastewater discharge point GPS co-ordinates are Latitude -12.76854 Longitude 130.98158.

Table 4 Monitoring parameters, frequencies and trigger values for wastewater

Sample location ID	Frequency	Analytical suite							
TCNT-IN	Monthly when discharging and quarterly when not discharging	BOD	TSS	pH	EC	Total P	Total N	E. coli, Enterococci, Total Coliforms	
TCNT-OUT									

9.3 Sampling procedures

All sampling was carried out by Top Organics who have received onsite training in sampling methods. All laboratory samples were collected into ALS Laboratory-supplied sample bottles/jars; some of which contain preservative where required. Once collected, these samples were kept cold in an esky with ice bricks until dispatched to the ALS shopfront on the same day as sampling to meet holding times.

All sampling and handling of samples were undertaken in accordance with the Environmental Management Plan (ENVR, 2022) and relevant standards and guidelines as outlined below:

- Australian Standard on Water Quality Sampling - Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples (AS/NZS 5667.1:1998)
- Australian Standard on Water Quality Sampling – Part 6: Guidance on sampling of rivers and streams (AS/NZS 5667.6:1998)
- Australian Standard on Water Quality Sampling – Part 10: Guidance on sampling of waste waters (AN/NZS 5667.10:1998)
- ANZECC & ARMCANZ 2000, Australian Guidelines for Water Quality Monitoring and Reporting, National Water Quality Management Strategy Paper No 7, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, Canberra.
- ANZECC & ARMCANZ 2000, Australian and New Zealand Guidelines for Fresh and Marine
- Water Quality, National Water Quality Management Strategy Paper No 4, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, Canberra.

10. Results

Water quality results from sampling of groundwater, surface water and wastewater are presented in Tables 5 – 8. Copies of the certified laboratory reports, and copies of the certificate of analysis for the samples collected are attached as Appendix A

10.1 Surface water

Surface water quality results and exceedances for all monitoring locations is provided in Table 5. A summary of the surface water quality results for each monitoring location is provided below.

SW1 – Upgradient of the WSPO

Surface water samples were collected from the SW1 monitoring location to compare water quality of surface water runoff coming from outside sources before mixing with wastewater that is then discharged from the WSPO:

- pH was above the Trigger Value during the January 2024 sampling event and reduced below the Trigger Value (5.96 pH), in March 2024. EC concentrations were below the trigger value for the reporting period.
- NOx as N concentrations were above the trigger value during the January 2024 sampling event. This was the only monitoring location where concentrations exceeded.
- TN and TP concentrations were above the Trigger Value during the reporting period.
- E. coli and Enterococci concentrations were below the Trigger Value for the reporting period, with the exception of an increase in Enterococci above the Trigger Value in January 2024. Enterococci then reduced below the LOR in March 2024.
- Total Coliforms concentrations were above the Trigger Value for the reporting period, indicating further interaction with surface water runoff was occurring prior to surface water flowing past the property, given that this monitoring location is upgradient of the WSPO.

SW2 – Adjacent to the WSPO

SW2 surface water samples were collected from the drainage channel adjacent to the WSP prior to the WSPO to compare water quality of surface runoff coming from neighbouring property sources before mixing with wastewater being discharged from the WSPO:

- pH was variable, ranging from 3.61 – 6.28 pH. EC concentrations were below the Trigger Value for the reporting period.
- NOx as N concentrations remained below the Trigger Value. There was an increase in concentrations during January 2024 (145 mg/L), however this was still below the trigger value and reduced during the March sampling event.
- TN and TP concentrations were above the Trigger Values for the reporting period. This is consistent with concentrations across all monitoring locations.
- E. coli was slightly above the Trigger Value during the January 2024 sampling event, which decreased for the March 2024 sampling event.
- Coliforms concentrations were well above the Trigger Value for the reporting period.
- Enterococci concentrations exceeded the Trigger Value during the January 2024 sampling event and decreased significantly during the March 2024 sampling event.

SW3 – Downgradient to the WSPO adjacent to Darwin River

To assess water quality of discharge water interacting with offsite surface runoff before entering the Darwin River, surface water samples were collected at SW3 from the drainage channel 210 m downstream and 6m prior to entering Darwin River:

- pH was within range and EC concentrations were below the Trigger Value for both sampling events.
- NOx as N concentration for the January 2024 sampling round was at the Trigger Value (0.08) and then reduced below the LOR for the March 2024 sampling event.
- TN and TP concentrations were above the Trigger Values for both sampling events.
- E. coli was above the Trigger Value in January 2024 at 1000 cfu/100 ml and then had a significant decrease in March 2024 below the Trigger Value.
- Coliforms were well above the Trigger Value for the reporting period and the highest concentration was detected (87000 cfu/100mL) in March 2024. Enterococci was above the Trigger Value in January 2024, and reduced during the next sampling round in March 2024.

SW4 – Darwin River causeway upstream from SW3

To assess water quality of the Darwin River upstream before it flowed past the property, samples were collected from the SW4 monitoring location which is located on the causeway crossing on Old Bynoe Road. Results of sampling demonstrate the river's water quality is similar to that assessed from SW1, SW2 and SW3 location along the drainage channel and therefore, presumed to have resulted from sources of surface water runoff entering the river prior to it flowing past TCNT property.

- pH was below the Trigger Value at 4.49 pH in January 2024, which then increased during March 2024. EC and NOx as N was below the Trigger Value for the reporting period.
- TN and TP concentrations were above the Trigger Values for the 2023-2024 reporting period, with the exception for concentrations of TP in March 2024, which was below the Trigger Value.
- E. coli slightly exceeded the Trigger Value during January 2024 (240 cfu/100 mL), and decreased below the Trigger Value in March 2024.
- Coliforms and Enterococci concentrations were significantly above the Trigger Value for the reporting period, with the exception of Enterococci. Enterococci concentrations slightly exceeded the Trigger Value in January 2024, and then decreased. Concentrations of Coliforms were generally elevated and consistent when compared to concentrations at SW1, SW2 and SW3, demonstrating there are offsite influences causing an increase in concentrations.

Table 5. Surface water quality results and exceedances

Analyte	LOR	Unit	Trigger value	Surface water monitoring locations							
				TCNT-SW1		TCNT-SW2		TCNT-SW3		TCNT-SW4	
Date				16/01/2024	20/03/2024	16/01/2024	20/03/2024	16/01/2024	20/03/2024	16/01/2024	20/03/2024
pH	0.01	-	6 - 7.5	6.18	5.96	3.61	6.28	6.27	6.84	4.49	7.06
EC	1	µS/cm	200	20	14	145	20	37	44	48	44
NOx as N	0.01	mg/L	0.08	0.12	0.08	0.04	0.07	0.08	<0.01	0.01	0.01
TKN as N	0.1	mg/L	-	0.5	0.4	0.6	0.8	0.6	0.4	0.9	0.6
Total N	0.1	mg/L	0.23	0.6	0.5	0.6	0.9	0.7	0.4	0.9	0.6
Total P	0.01	mg/L	0.01	0.02	0.02	0.06	0.05	0.07	0.02	0.05	0.01
E.coli	1	cfu/100mL	200	180	~4	220	~110	1000	~12	240	~35
Coliforms	1	cfu/100mL	200	38000	19000	14000	31000	35000	87000	43000	65000
Enterococci	1	cfu/100mL	200	1100	~1	930	~2	1400	100	~230	54

10.2 Groundwater

Groundwater quality results from groundwater bore RN034907 for the reporting period are shown in Table 6. A summary of groundwater quality results are listed below:

- pH and EC remained below the Trigger Values during the reporting period. During the December 2023 monitoring event, pH was unable to be analysed due to freight delays due to weather and samples passed the laboratory holding times.
- There was an increase of TN during December 2023 (0.2 mg/L), and again in March 2024 (1.1 mg/L). Concentrations then reduced to typical concentrations in the June 2024 sampling event (0.4 mg/L).
- TP concentrations remained consistent until an increase in June 2024 (0.12 mg/L).
- E. coli and Enterococci concentrations remained below the limit of reporting for all monitoring rounds.
- There was an increase in Coliforms during March 2024 sampling event (480 cfu/100ml), which then decreased to typical concentrations in the June 2024 sampling event (6 cfu/100ml). E.coli, Enterococci and Coliforms were unable to be analysed during the December 2023 sampling event due to freight delays, causing the samples to exceed their holding times.

Table 6. Groundwater quality results and exceedances

Analyte	LOR	Unit	Trigger value	TCNT - GW		
				14/12/2023	20/03/2024	12/06/2024
pH	0.01	-	7 – 8.5	-	7.94	7.72
EC	1	µS/cm	400	364	368	371
NOx as N	0.01	mg/L	-	<0.01	<0.01	<0.01
TKN as N	0.1	mg/L	-	0.2	1.1	0.4
Total N	0.1	mg/L	Any increase from previous monitoring round	0.2	1.1	0.4
Total P	0.01	mg/L		0.04	0.03	0.12
E.coli	1	cfu/100mL		-	<1	<1
Coliforms	1	cfu/100mL		-	480	~6
Enterococci	1	cfu/100mL		-	<1	<1

10.3 Wastewater

Wastewater quality results for effluent entering the WSP are provided in Table 7 below. Results for bacteria and pH taken during the December 2023 monitoring round were not available due to freight delays when in transit to the laboratory causing the samples to become compromised.

Table 7. Wastewater quality results for TCNT-IN

Analyte	LOR	Unit	TCNT – IN			
			14/12/2023	16/01/2024	20/03/2024	12/06/2024
pH	0.01	-	-	6.73	8.60	8.58
EC	1	µS/cm	319	7.9	77	278
TSS	5	mg/L	32	11	32	24
NOx as N	0.01	mg/L	0.13	1.05	0.23	<0.01
TKN as N	0.1	mg/L	2.2	0.9	1.1	2.4
Total N	0.1	mg/L	2.3	2.0	1.3	2.4

Total P	0.01	mg/L	0.20	0.15	0.26	0.60
E.coli	1	cfu/100mL	-	1500	<1	50
Coliforms	1	cfu/100mL	-	58000	8600	81000
Enterococci	1	cfu/100mL	-	3000	12	70

Wastewater quality results for effluent prior to discharging from the WSP are provided in Table 8 below.

Table 8. Wastewater quality results for TCNT-OUT

Analyte	LOR	Unit	TCNT – OUT			
			14/12/2023	16/01/2024	20/03/2024	12/06/2024
pH	0.01	-	-	5.49	9.15	8.61
EC	1	µS/cm	330	70	74	280
TSS	5	mg/L	26	12	36	19
NOx as N	0.01	mg/L	0.11	2.45	0.24	<0.01
TKN as N	0.1	mg/L	2.4	1.7	2.6	2.5
Total N	0.1	mg/L	2.5	4.2	2.8	2.5
Total P	0.01	mg/L	0.23	0.19	0.34	0.56
E.coli	1	cfu/100mL	-	1200	<1	~60
Coliforms	1	cfu/100mL	-	42000	10000	86000
Enterococci	1	cfu/100mL	-	2800	2	82

10.4 NT EPA notifiable exceedances

As per EPL343 requirements described in Section 9.2 above, TCNT is required to notify NT EPA of specific non-compliances with EPL343. As per licence condition 45.2, exceedances of three times or more of a trigger value at TCNT-SW3 during the reporting period are a non-compliance.

Considering these non-compliance definitions, the results from the 2023-2024 reporting period have been assessed and tabulated against these clause definitions. These exceedances are presented in Table 9 below.

Table 9. EPL Clause 45.2: NT EPA notifiable exceedances - Exceedances three times greater than the Trigger Value at monitoring location 3 (SW3).

Analyte	Total Phosphorus	E.coli	Coliforms	Enterococci
Assessment criteria	0.01	200 cfu/100mL	200 cfu/100mL	200 cfu/100mL
TCNT-SW3 16/01/2024	0.07	1000	35000	1400
TCNT-SW3 20/03/2024	-	-	87000	-

11. Discussion and long-term trend analysis

11.1 Surface water

pH was variable across all surface water monitoring locations, and generally was not consistent with historic levels. Samples have generally exhibited a lower pH, which could be attributed to interaction with surface water run-off from Reedbeds Road. Further monitoring will be required to determine long-term trends.

EC results were generally below the Trigger Value across the reporting periods and did not demonstrate major variation from historic levels, with the exception of an increase above the Trigger Value at SW2 (145 μ S/cm) in January 2024. This could be associated with surface water run-off from offsite sources (i.e. Reedbeds Road). Historically, SW1 has recorded the highest EC (221 μ S/cm) of all monitoring locations.

NOx as N results were generally consistent with historic data. Concentrations were mostly below the Trigger Value at all monitoring locations, with the exception of an increase above the Trigger Value (0.12 mg/L) at the upgradient monitoring location (SW1). However, historically, NOx as N concentrations at SW1 have generally been high.

NOx as N concentrations at SW3 (adjacent to the WSPO) showed an increase from historic trends, but still remain below the Trigger Value. Given that NOx as N concentrations were generally highest at SW1, this indicates that mixing with offsite sources from neighbouring properties is influencing surface water results and exceedances are not from TCNT's operations.

TN was above the Trigger Value for all locations, which is consistent with historic data. TN concentrations show some variation between monitoring locations over the reporting periods, with no clear trend. TN was higher in concentration at SW4 and SW2, which differs from historic data where TN concentrations were previously highest at SW3. Further monitoring will be required to determine long-term trends.

TP concentrations were generally above the Trigger Value and were consistent across all monitoring locations. TP had the highest concentration at the downstream site (SW3). Despite this, TP concentrations were also above the Trigger Value in Darwin River (SW4), before water interacts with runoff from the TCNT property, further indicating that offsite sources contribute to elevated levels.

E. coli concentrations were generally consistent across all monitoring locations and with the previous reporting period, with the exception of an increase to 1000 cfu/100 mgL at the downstream location, indicating mixing with discharge from the WSP and Darwin River.

Results of sampling from SW4 demonstrate the water quality of Darwin River is similar to that assessed from SW1, SW2 and SW3 location along the drainage channel and therefore, presumed to have resulted from sources of surface water runoff entering the river prior to it flowing past TCNT property. Therefore, the sporadic and short-lived discharges of water coming from the TCNT property and interacting with offsite sources of surface water before entering the Darwin River is not considered to be causing impact.

Total coliforms (excluding *E. coli*) are not considered useful as indicators of the presence of faecal contamination and enteric pathogens, as there are many environmental coliforms that are not of faecal origin. However, increased concentrations should be investigated.

11.2 Groundwater and wastewater

Appendix B provides groundwater quality results for all sampling undertaken to date, and Appendix A provides graphed data to show long-term trends.

pH and EC show no variation from historical trends and remain stable. Testing of the groundwater after completion of drilling groundwater bore RN034907 in 2006 returned a pH of 7.9 (NR Maps, 2024), indicating that pH concentrations remain consistent with pre-operational activities.

TN concentrations show a slight variation from historic trends, with an increase to 1.1 mg/L in March 2024, before decreasing to 0.4 mg/L in June 2024.

TP results did not demonstrate large variation from historic trends, with the exception of an increase to 0.12 mg/L in June 2024.

Total coliforms results are not consistent with historic trends. In March 2024, Coliforms concentrations significantly increased to 480 cfu/100 mL, before returning back to historic levels. This is the highest concentration recorded at all sites since 2022. If future results demonstrate further increases as seen here, then an investigation will be conducted to determine the cause. Enterococci and *E. coli* results followed historic trends, with concentrations below the LOR.

In wastewater, *E. coli*, Coliforms and Enterococci were generally lower at TCNT-OUT when compared to concentrations at TCNT-IN, which indicates the treatment performance of the WSP is operating adequately and is functioning as a facultative environment. No complaints of odours were received during the reporting period.

12. Conclusion

Monitoring conducted during the reporting period has not identified any significant difference in concentration of water quality parameters between the upgradient and downgradient sites. Data analysis undertaken in previous years has also not shown any evidence of increasing trends of potential pollutant, and further monitoring to obtain more data will be required to determine potential trends.

There were notifiable exceedances under Clause 45.7 of EPL343 at SW3.

There were no recorded incidents, complaints or unusual activities on-site that may have caused contamination issues downstream and no visual indicators of contamination in Darwin River.

13. References

Bureau of Meteorology 2024, Climate Data Online. [online] Available at: <http://www.bom.gov.au/climate/data> (Accessed August 2024).

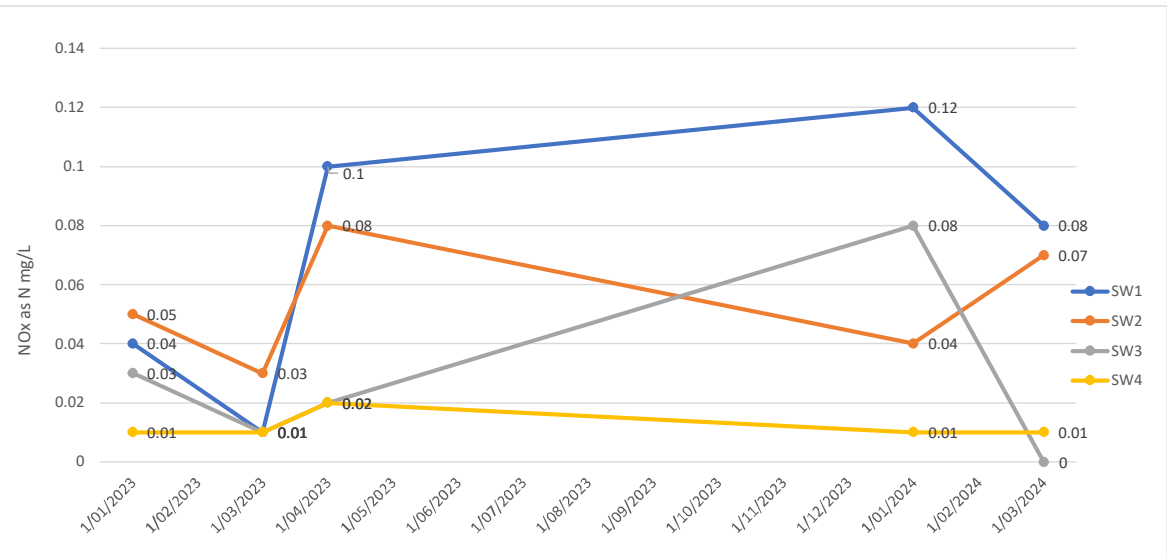
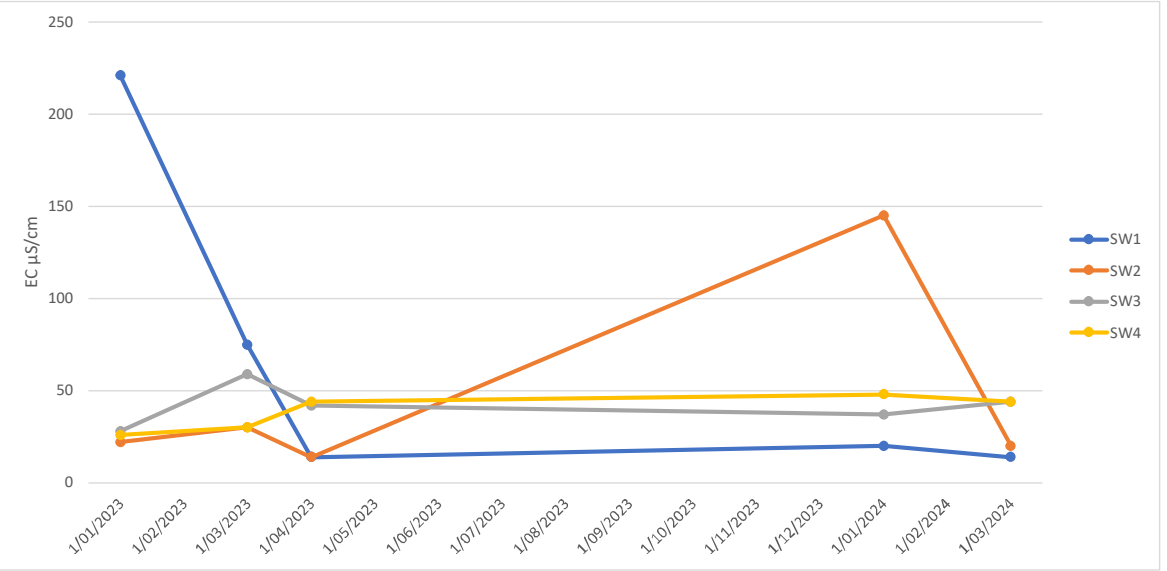
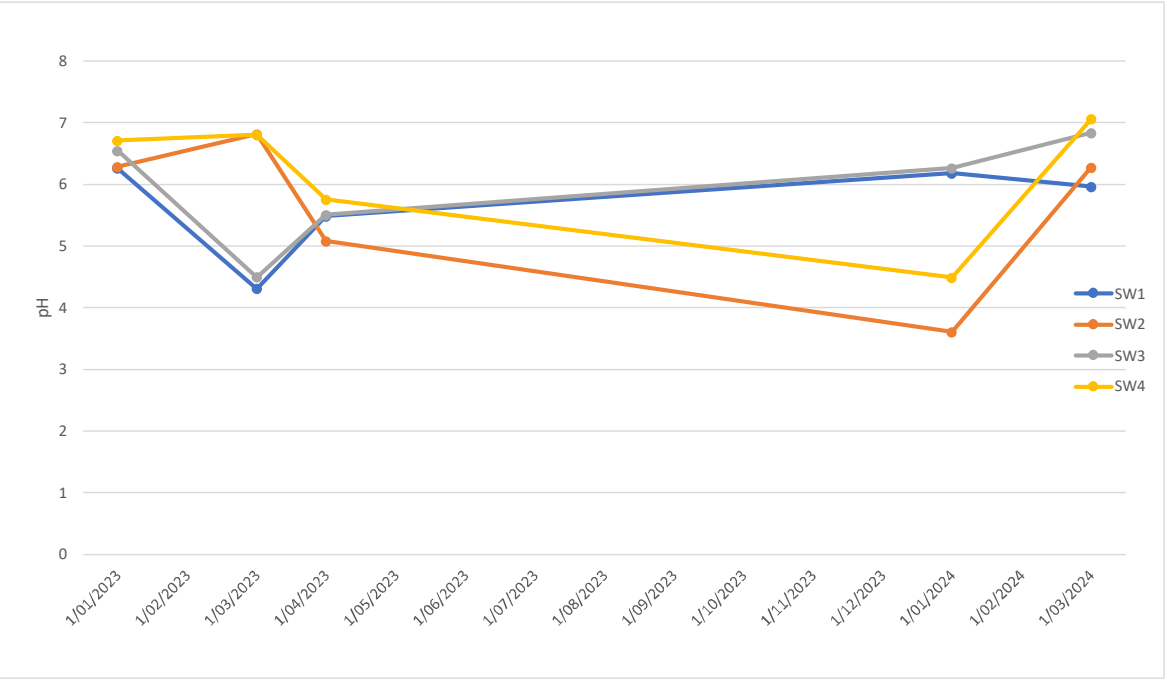
ENVR 2022, Supporting information for the Top Croc NT Crocodile Farm EPL application, report prepared for Top Organic Enterprises Pty Ltd by ENVR Solutions Pty Ltd, June 2022.

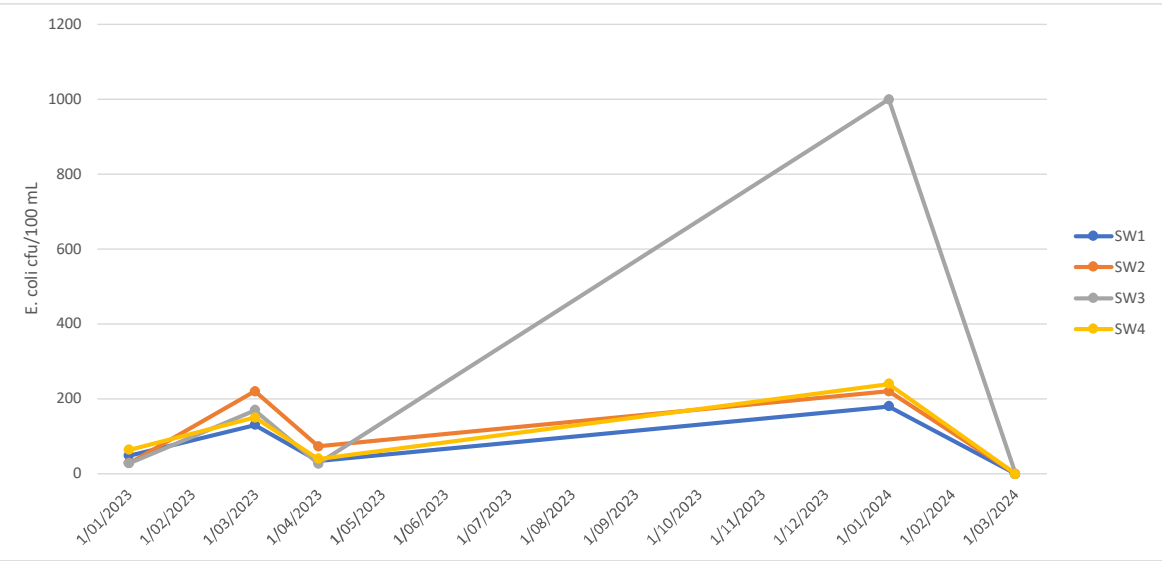
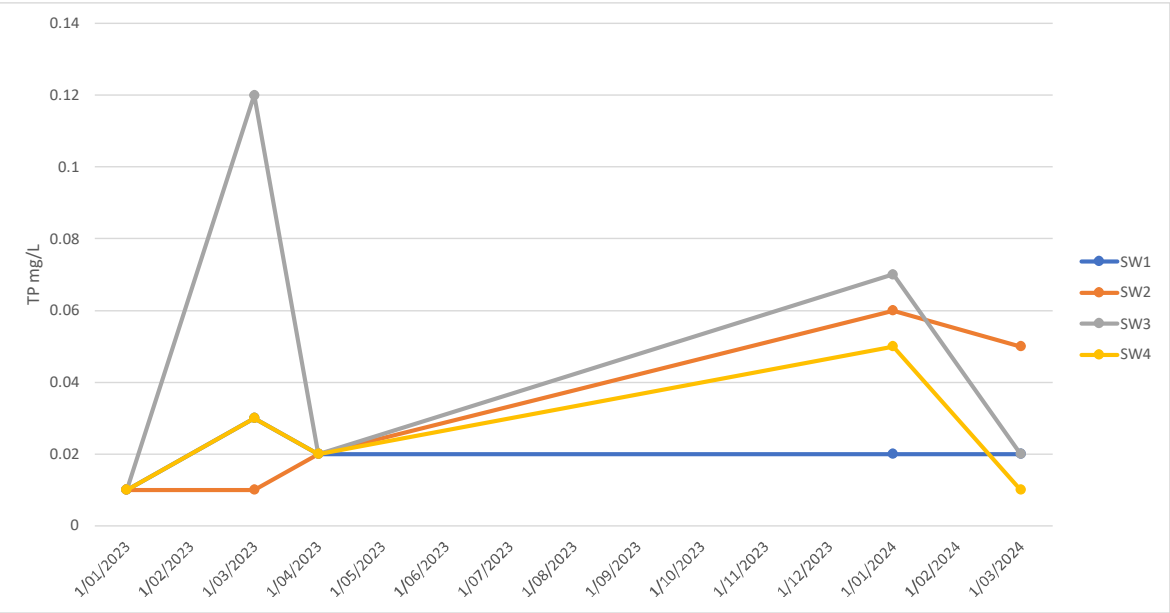
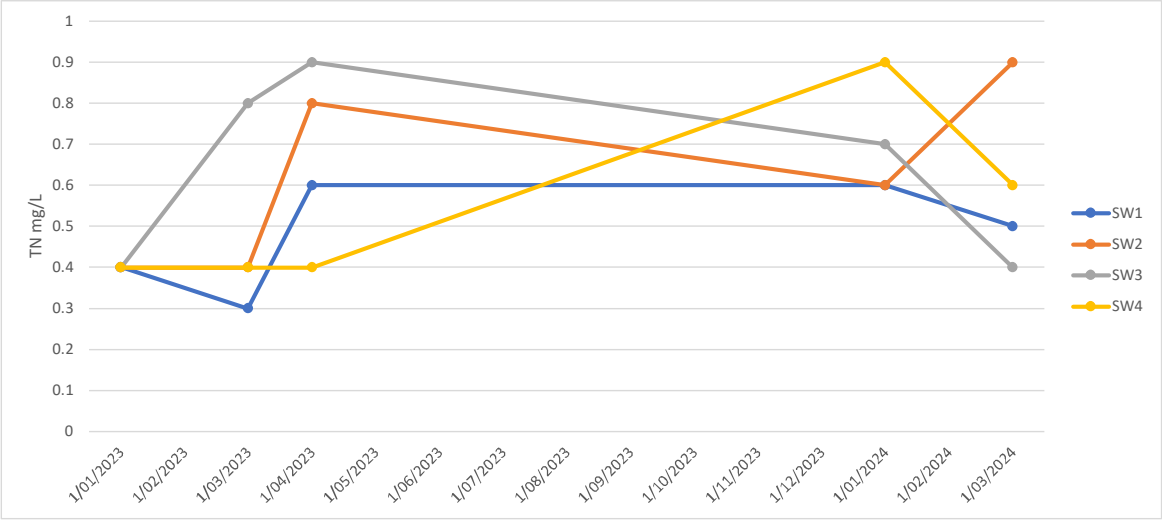
NRETAS (2014): Darwin Harbour Water Quality Protection Plan, Department of Land Resource Management, NT Government, Palmerston.

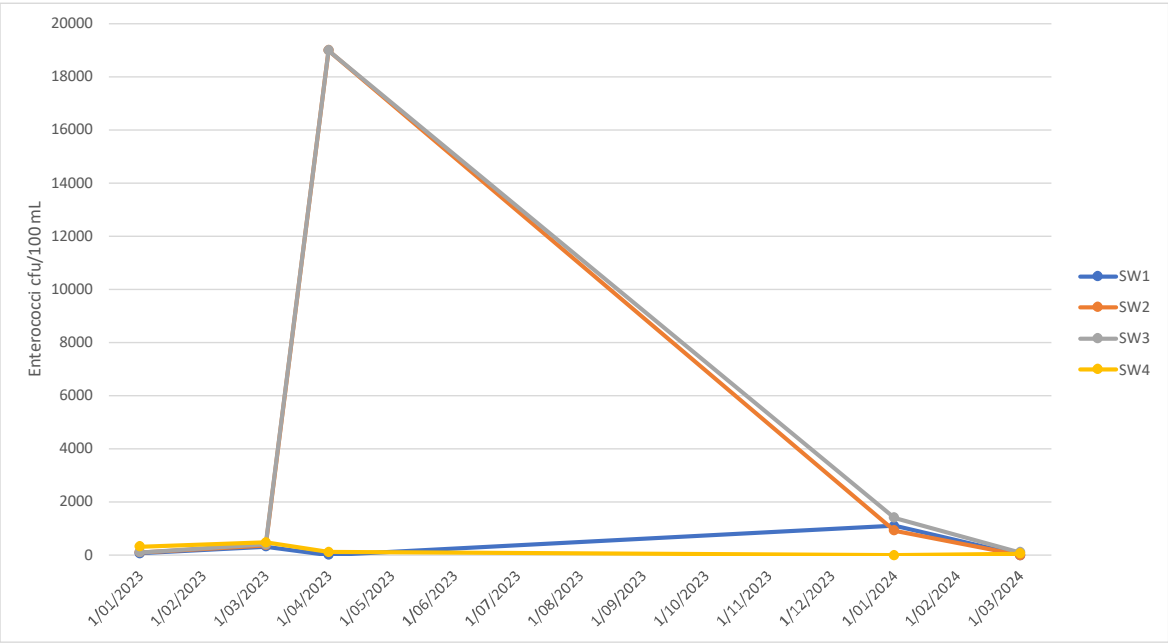
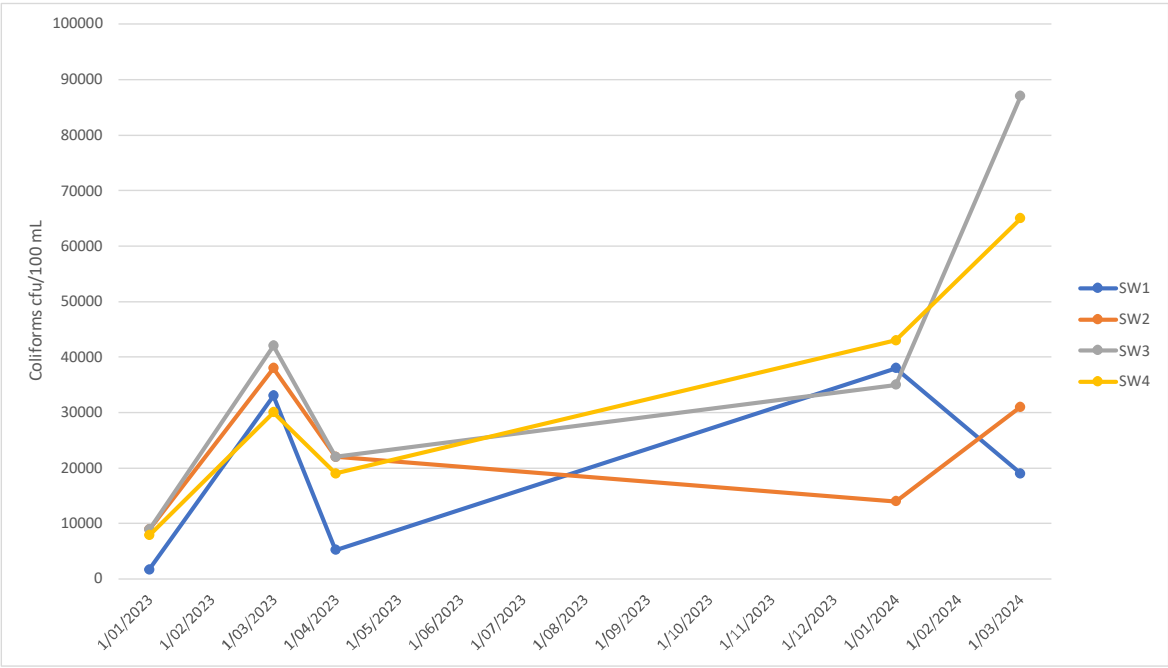
Northern Territory Government (2024): Natural Resource (NR) Maps (DEWPS) Search – Available at: <https://nrmaps.nt.gov.au/nrmaps.html>. (Accessed August 2024).

Appendix A – Surface water and groundwater quality trend analysis

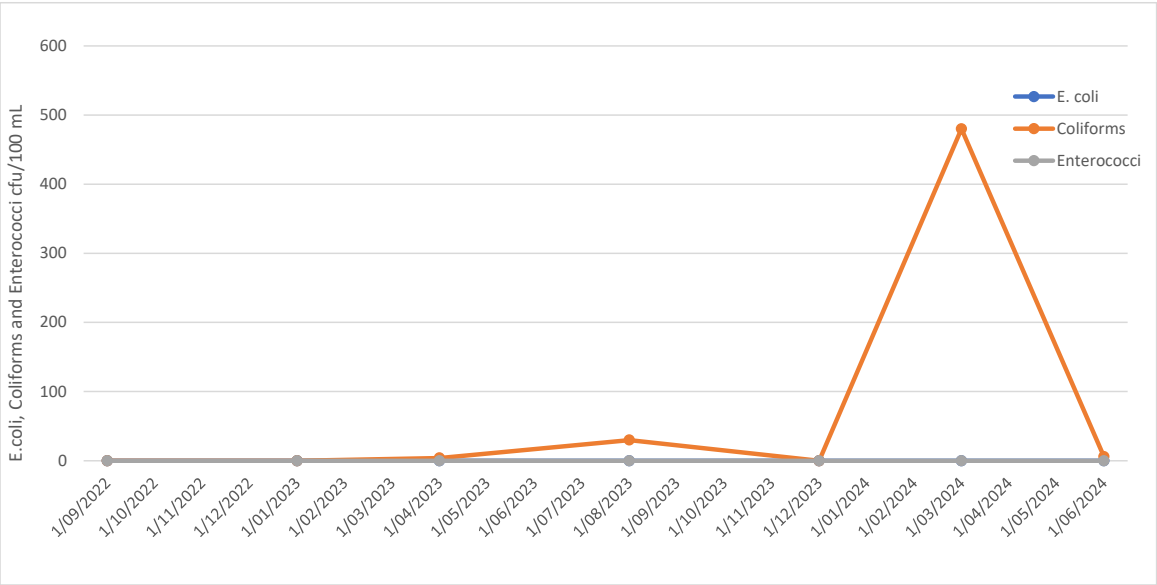
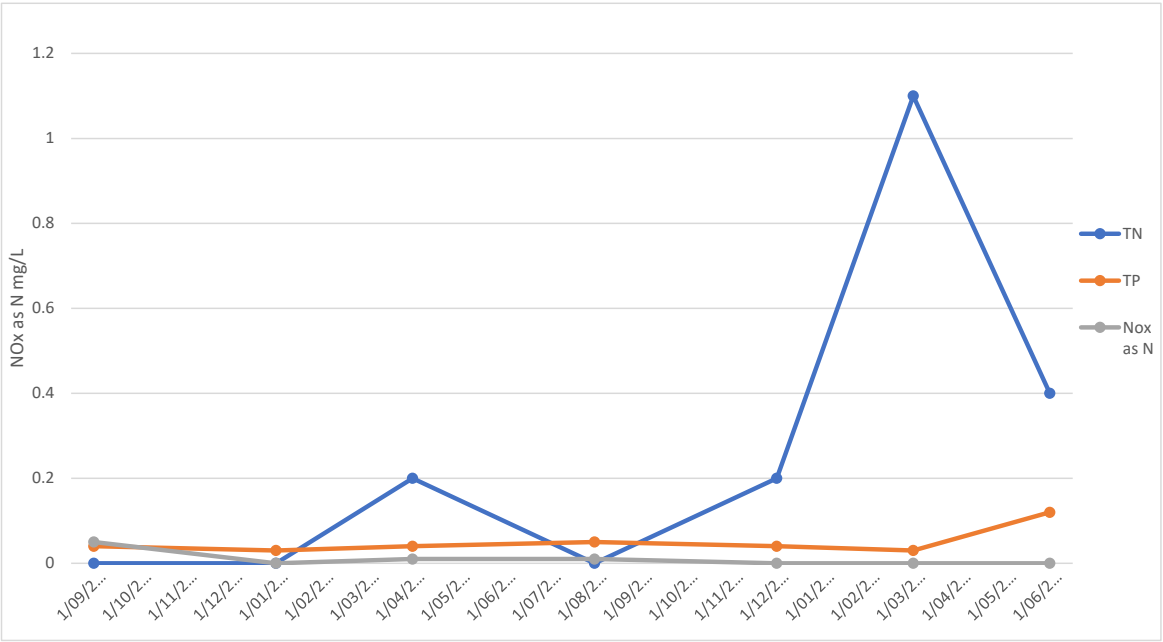
Surface water trend analysis







Groundwater trend analysis



Appendix B – Historical data

Surface water hisorical data

Site ID	Date	pH	EC	NOX as N	TKN as N	TN	TP	E. coli	Coliforms	Enterococci
		-	µS/cm	mg/L	mg/L	mg/L	mg/L	cfu/100mL	cfu/100mL	cfu/100mL
Surface water EPL343 Trigger Values		6 – 7.5	200	0.08	-	0.23	0.01	200	200	200
SW1	3/01/2023	6.26	221	0.04	0.4	0.4	0.01	48	1700	70
SW1	17/04/2023	5.49	14	0.1	0.5	0.6	0.02	34	5200	15
SW1	1/03/2023	4.31	75	0.01	0.3	0.3	0.03	130	33000	330
SW1	16/01/2024	6.18	20	0.12	0.5	0.6	0.02	180	38000	1100
SW1	20/03/2024	5.96	14	0.08	0.4	0.5	0.02	~4	19000	1
SW2	3/01/2023	6.29	22	0.05	0.3	0.4	0.01	28	8900	110
SW2	17/04/2023	5.08	14	0.08	0.7	0.8	0.02	73	22000	19000
SW2	1/03/2023	6.82	30	0.03	0.4	0.4	0.01	220	38000	370
SW2	16/01/2024	3.61	145	0.04	0.6	0.6	0.06	220	14000	930
SW2	20/03/2024	6.28	20	0.07	0.8	0.9	0.05	110	31000	2
SW3	3/01/2023	6.55	28	0.03	0.4	0.4	0.01	28	8900	110
SW3	17/04/2023	5.51	42	0.02	0.9	0.9	0.02	27	22000	19000
SW3	1/03/2023	4.5	59	0.01	0.8	0.8	0.12	170	42000	410
SW3	16/01/2024	6.27	37	0.08	0.6	0.7	0.07	1000	35000	1400
SW3	20/03/2024	6.84	44	<0.01	0.4	0.4	0.02	12	87000	100
SW4	3/01/2023	6.71	26	0.01	0.4	0.4	0.01	64	7900	320
SW4	17/04/2023	5.76	44	0.02	0.4	0.4	0.02	40	19000	120
SW4	1/03/2023	6.8	30	0.01	0.4	0.4	0.03	150	30000	480
SW4	16/01/2024	4.49	48	0.01	0.9	0.9	0.05	240	43000	230
SW4	20/03/2024	7.06	44	0.01	0.6	0.6	0.01	35	65000	54

Groundwater hisorical data

Site ID	Date	pH	EC	NOX as N	TKN as N	TN	TP	E. coli	Coliforms	Enterococci
		-	µS/cm	mg/L	mg/L	mg/L	mg/L	cfu/100mL	cfu/100mL	cfu/100mL
Groundwater EPL343 Trigger Values		7– 8.5	400	-	-	Any increase from previous	Any increase from previous	Any increase from previous	Any increase from previous	Any increase from previous
GW	26/09/2022	7.81	383	0.05	<0.1	<0.1	0.04	<1	<1	<1
GW	3/01/2023	8.09	354	<0.01	<0.1	<0.1	0.03	<1	<1	<1
GW	17/04/2023	7.82	371	0.01	0.2	0.2	0.04	<1	4	<1
GW	23/08/2023	7.81	374	0.01	<0.1	<0.1	0.05	<1	30	<1
GW	14/12/2023	-	364	<0.01	0.2	0.2	0.04	-	-	-
GW	20/03/2024	7.94	368	<0.01	1.1	1.1	0.03	<1	480	<1
GW	12/06/2024	7.72	371	<0.01	0.4	0.4	0.12	<1	6	<1

Wastewater historical
data

Site ID	Date	pH	EC	BOD	TSS	NOX as N	TKN as N	TN	TP	E. coli	Coliforms	Enterococci
		-	µS/cm		mg/L	mg/L	mg/L	mg/L	mg/L	cfu/100mL	cfu/100mL	cfu/100mL
TCNT-IN	26/09/2023	9.33	299	2	82	0.01	5.1	5.1	0.87	<2	22	<2
TCNT-IN	3/01/2023	7.11	112	<2	18	2.32	2	4.3	0.36	3200	8900	18000
TCNT-IN	1/03/2023	7.17	90	2	23	1.87	1.4	3.3	0.42	1000	110000	1100
TCNT-IN	17/04/2023	7	114	6	14	1.23	1.8	3.0	0.41	520	76000	10
TCNT-IN	23/08/2023	9.09	305	10	46	0.01	4.2	4.2	0.64	3	29000	1600
TCNT-IN	14/12/2023	-	319		32	0.13	2.2	2.3	0.2	-	-	-
TCNT-IN	16/01/2024	6.73	7.9		11	1.05	0.9	2	0.15	1500	58000	3000
TCNT-IN	20/03/2024	8.6	77		32	0.23	1.1	1.3	0.26	<1	8600	12
TCNT-IN	12/06/2024	8.58	278		24	<0.01	2.4	2.4	0.6	50	81000	70
TCNT-OUT	26/09/2023	9.74	314	6	81	<0.01	5.3	5.3	0.89	<2	<2	14
TCNT-OUT	3/01/2023	7.12	84	<2	18	1.78	1.6	3.4	0.23	680	4900	2000
TCNT-OUT	1/03/2023	7.23	92	2	20	1.87	1.4	3.3	0.43	970	170000	1500
TCNT-OUT	17/04/2023	6.82	113	2	10	1.23	1.8	1.8	0.41	380	170000	100
TCNT-OUT	23/08/2023	9.09	302	8	48	0.01	3.3	3.3	0.6	10	30000	2400
TCNT-OUT	14/12/2023	-	330		26	0.11	2.4	2.5	0.23	-	-	-
TCNT-OUT	16/01/2024	5.49	70		12	2.45	1.7	4.2	0.19	1200	42000	2800
TCNT-OUT	20/03/2024	9.15	74		36	0.24	2.6	2.8	0.34	<1	10000	2
TCNT-OUT	12/06/2024	8.61	280		19	<0.01	2.5	2.5	0.56	~60	86000	82

Appendix C – Laboratory reports

Please note: Sample receipt times for the Darwin office is 8:30 am – 2:00 pm sharp from **Monday to Thursday**. There is no sample dispatch on Fridays



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From: charmaine carter <toporganicent@gmail.com>

Sent: Monday, 18 December 2023 12:03 PM

To: Lana Civelles <l.civelle@ALSGlobal.com>

Subject: [EXTERNAL] - Re: Freight Delay 14/12

You don't often get email from toporganicent@gmail.com. [Learn why this is important](#)

CAUTION: This email originated from outside of ALS. Do not click links or open attachments unless you recognize the sender and are sure content is relevant to you.

ok and now I have to wait until the new year... I will see you then we cant control the weather
thanks for the update

On Mon, Dec 18, 2023 at 11:12 AM Lana Civelles <l.civelle@alsglobal.com> wrote:

Good morning Charmaine,

I regret to inform you that Thursday's overnight courier service was delayed due to a freight issue while transiting through Brisbane due to bad weather, and eskys only arrived this morning to the Sydney laboratory. We were expecting a late delivery, however it appears they did not make it Friday night.

Thus, micro samples would now be considered compromised. Would you like to proceed with the analysis?

On behalf of the courier, we apologise for the inconvenience. Please contact me if you have any queries.



Kind regards,

Lana Civelle
Environmental Services Officer
Darwin, Australia

P: +61 08 8942 2608
l.civelle@alsglobal.com
Unit 4/16 Charlton Court

Woolner, NT, 0820

alsglobal.com



Please note: Sample receipt times for the Darwin office is **8:30 am – 2:00 pm** sharp from **Monday to Thursday**. There is no sample dispatch on Fridays



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--

Wayne Kinbacher & Charmaine Carter

PO BOX 146

DARWIN RIVER NT 0841

Wayne's Mobile: 0428886818 (TOP CROC NT)



CERTIFICATE OF ANALYSIS

Work Order	: ES2343431	Page	: 1 of 2
Client	: TOP CROC NT	Laboratory	: Environmental Division Sydney
Contact	: Wayne Kinbacher	Contact	: Customer Services ES
Address	: 1350 Old Bynoe Rd, Berry Springs NT 0838	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: TOP CROC NT CROCODILE FARM - WASTEWATER	Date Samples Received	: 18-Dec-2023 10:30
Order number	: ----	Date Analysis Commenced	: 19-Dec-2023
C-O-C number	: ----	Issue Date	: 27-Dec-2023 11:13
Sampler	: Wayne Kinbacher		
Site	: ----		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		



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, 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
Wisam Marassa	Inorganics Coordinator	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.

Analytical Results

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

Sample ID

				TCNT-GW	----	----	----	----
Sampling date / time				14-Dec-2023 07:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2343431-001	-----	-----	-----	-----
Result					----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	364	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
[^] Total Nitrogen as N	----	0.1	mg/L	0.2	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.04	----	----	----	----



QUALITY CONTROL REPORT

Work Order	: ES2343431	Page	: 1 of 3
Client	: TOP CROC NT	Laboratory	: Environmental Division Sydney
Contact	: Wayne Kinbacher	Contact	: Customer Services ES
Address	: 1350 Old Bynoe Rd, Berry Springs NT 0838	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: TOP CROC NT CROCODILE FARM - WASTEWATER	Date Samples Received	: 18-Dec-2023
Order number	: ----	Date Analysis Commenced	: 19-Dec-2023
C-O-C number	: ----	Issue Date	: 27-Dec-2023
Sampler	: Wayne Kinbacher		
Site	: ----		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		



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
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW



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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.

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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 Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA010P: Conductivity by PC Titrator (QC Lot: 5503732)									
ES2343391-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	592	589	0.5	0% - 20%
EW2305618-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	316	316	0.0	0% - 20%
ES2343251-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	80	79	1.3	0% - 20%
ES2343719-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	6040	6070	0.5	0% - 20%
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5508053)									
ES2343386-006	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.05	0.05	0.0	No Limit
ES2343251-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.01	0.01	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5508056)									
ES2343378-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.6	1.6	0.0	0% - 50%
ES2343386-008	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.2	0.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5508055)									
ES2343378-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.18	0.22	15.6	0% - 20%
ES2343386-008	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.04	0.04	0.0	No Limit



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.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EA010P: Conductivity by PC Titrator (QCLot: 5503732)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	99.0	89.9	110
				<1	2100 µS/cm	98.3	90.2	111
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5508053)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	104	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5508056)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	88.1	69.0	101
				<0.1	1 mg/L	96.6	70.0	118
				<0.1	5 mg/L	88.7	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5508055)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	92.4	71.3	126
				<0.01	0.442 mg/L	92.9	71.3	126
				<0.01	1 mg/L	102	70.0	130

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 Concentration	Spike Recovery (%) MS	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number			Low	High
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5508053)							
ES2343251-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	119	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5508056)							
ES2343379-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	92.6	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5508055)							
ES2343379-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	91.8	70.0	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2343431	Page	: 1 of 4
Client	: TOP CROC NT	Laboratory	: Environmental Division Sydney
Contact	: Wayne Kinbacher	Telephone	: +61-2-8784 8555
Project	: TOP CROC NT CROCODILE FARM - WASTEWATER	Date Samples Received	: 18-Dec-2023
Site	: ----	Issue Date	: 27-Dec-2023
Sampler	: Wayne Kinbacher	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: WATER

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P) TCNT-GW	14-Dec-2023	----	----	----	19-Dec-2023	11-Jan-2024	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) TCNT-GW	14-Dec-2023	----	----	----	21-Dec-2023	11-Jan-2024	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) TCNT-GW	14-Dec-2023	21-Dec-2023	11-Jan-2024	✓	21-Dec-2023	11-Jan-2024	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) TCNT-GW	14-Dec-2023	21-Dec-2023	11-Jan-2024	✓	21-Dec-2023	11-Jan-2024	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Conductivity by Auto Titrator	EA010-P	4	24	16.67	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	19	10.53	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Conductivity by Auto Titrator	EA010-P	3	24	12.50	8.33	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	20	15.00	15.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	20	15.00	15.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Conductivity by Auto Titrator	EA010-P	2	24	8.33	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)

CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADELAIDE 3/1 Burma Road Pooraka SA 5095
Ph: 08 8162 5130 E: sdelaide@alsglobal.com

□BRISBANE 2 Byth Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@afsglobal.com

GLADSTONE 48 Callemondah Drive Gladstone QLD 4680
Ph: 07 4978 7944 E: AISEnviro.Gladstone@aalsglobal.com

LIMACKAY Unit 2/20 Caterpillar Drive Paget QLD 4740
Ph: 07 4962 5795 E: ALSEnviro.Mackay@alsglobal.com

MELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 8549 9600 E: samples.melbourne@elsgdbal.com

□MUDGEE, 1/29 Sydney Road Mudgee NSW 2850
Ph: 02 6372 6735 E: mudgee.mail@elsglobal.com

NEWCASTLE 5/585 Maitland Road Mayfield West NSW 2304
Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

QINOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 02 4423 2063 E: nowra@alsglobal.com

□PERTH 26 Rigali Way Wangara WA 6065
Ph: 08 9406 1301 E: samples.perth@alsglobal.com

□SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

☐ TOWNSVILLE 13 Carlton Street Kiwan QLD 4817
 Ph: 07 4773 0000 E: AL.Serviro.Townsville@aisglobal.com

WOLLONGONG 1/18-21 Ralph Black Drive, Nth Wollongong NSW 2500
Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: TOP ORGANIC ENT PL TCNT		TURNAROUND REQUIREMENTS: ☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
OFFICE: 1350 OLD BYNOE RD BERRY SPRINGS NT 0838		(Standard TAT may be longer for some tests e.g., Ultra Trace Organics)		Custody Seal Intact? Yes No NA	
PROJECT: TOP CROC NT CROCODILE FARM - GROUND WATER	PROJECT NO.:	ALS QUOTE NO.:	COC SEQUENCE NUMBER (Circle)		Free ice / frozen ice bricks present upon receipt? Yes No NA
ORDER NUMBER:	PURCHASE ORDER NO.:	COUNTRY OF ORIGIN:	COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: WAYNE KINBACHER		CONTACT PH: 0428886818		OP: 1 2 3 4 5 6 7	Other comment:
SAMPLER: WAYNE	SAMPLER MOBILE: 0428886818		RELINQUISHED BY: Charmaine Carter	RECEIVED BY: 	RELINQUISHED BY:
COC Emailed to ALS? (YES / NO)	EDD FORMAT (or default):		DATE/TIME: 14.12.23 10:53am	DATE/TIME: 14/12/23 10:53	DATE/TIME: 12pm
Email Reports to (will default to PM if no other addresses are listed): toporganicent@gmail.com			DATE/TIME: 14/12/23 10:53am		
Email Invoice to (will default to PM if no other addresses are listed): toporganicent@gmail.com			DATE/TIME: 14/12/23 10:53am		

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	E.coli, Enterococci, Total Coliforms	TN, TP	PHEC						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
I	TCNT - GW	14-12-23 7:30 am.	W		4	X	X	X						
TOTAL														

LAB OF ORIGIN:
DARWIN

Environmental Division
Sydney
Work Order Reference
ES2343431

Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cl₂ Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = Vial Acid HCl Preserved; VB = Vial Acid Sodium Bisulfate Preserved; VS = Vial Acid Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; Hs = HCl preserved Speciation bottle; SP = Sulfuric Preserve
Z = Zinc Acetate Preserved Bottle; F = FDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Spills; B = Unpreserved Bag; U = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

LAB OF ORIGIN:
DARWIN

Environmental Division
Sydney
Work Order Reference
ES2343431



Telephone : + 61-2-8784 8555

Zac Grima

From: Jack Clifton
Sent: Monday, 18 December 2023 2:23 PM
To: Zac Grima
Subject: FW: [EXTERNAL] - Re: Freight Delay 14/12

Kind Regards,

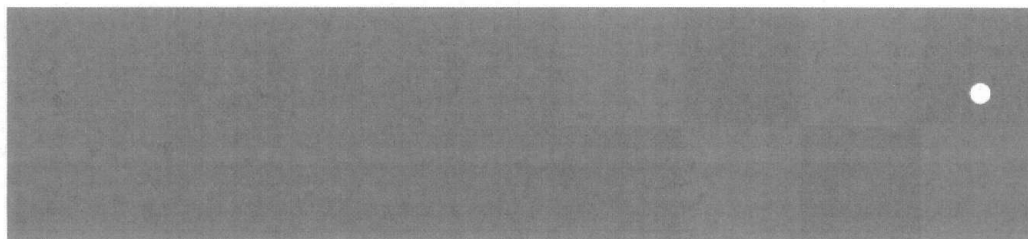


right solutions.
right partner.

Jack Clifton
Sample Receipt Coordinator, Environmental
Sydney, NSW

O: +61 2 8784 8555
D: +61 2 8784 8532
Jack.Clifton@alsglobal.com
277-289 Woodpark Road
Smithfield NSW 2164 AUSTRALIA

alsglobal.com



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From: Lana Civelles <l.civelles@ALSGlobal.com>
Sent: Monday, 18 December 2023 2:04 PM
To: Samples Sydney <Samples.Sydney@alsglobal.com>; JONATHAN WALKER <jonathan.walker@ALSGlobal.com>
Subject: FW: [EXTERNAL] - Re: Freight Delay 14/12

Hi SR,

Update for delayed WO - TOPCROC ES2343388 & ES2343431.

Charmaine confirmed via phone conversation to only **go ahead with what is in holding time.**

Thus, no micro, pH or BOD.

Thanks!



Kind regards,

Lana Civelle
Environmental Services Officer
Darwin, Australia

P: +61 08 8942 2608
l.civelle@alsglobal.com
Unit 4/16 Charlton Court
Woolner, NT, 0820

alsglobal.com



Please note: Sample receipt times for the Darwin office is 8:30 am – 2:00 pm sharp from **Monday to Thursday**. There is no sample dispatch on Fridays

CLICK HERE TO SEE OUR FESTIVE OPENING TIMES

From: charmaine carter <toporganicent@gmail.com>

Sent: Monday, 18 December 2023 12:03 PM

To: Lana Civelle <l.civelle@ALSGlobal.com>

Subject: [EXTERNAL] - Re: Freight Delay 14/12

You don't often get email from toporganicent@gmail.com. [Learn why this is important](#)

CAUTION: This email originated from outside of ALS. Do not click links or open attachments unless you recognize the sender and are sure content is relevant to you.

ok and now I have to wait until the new year... I will see you then we cant control the weather thanks for the update

On Mon, Dec 18, 2023 at 11:12 AM Lana Civelle <l.civelle@alsglobal.com> wrote:

Good morning Charmaine,

I regret to inform you that Thursday's overnight courier service was delayed due to a freight issue while transiting through Brisbane due to bad weather, and eskys only arrived this morning to the Sydney laboratory. We were expecting a late delivery, however it appears they did not make it Friday night.

Thus, micro samples would now be considered compromised. Would you like to proceed with the analysis?



CERTIFICATE OF ANALYSIS

Work Order	: ES2343388	Page	: 1 of 2
Client	: TOP CROC NT	Laboratory	: Environmental Division Sydney
Contact	: Wayne Kinbacher	Contact	: Customer Services ES
Address	: 1350 Old Bynoe Rd, Berry Springs NT 0838	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: TOP CROC NT CROCODILE FARM - WASTEWATER	Date Samples Received	: 14-Dec-2023 08:30
Order number	: ----	Date Analysis Commenced	: 19-Dec-2023
C-O-C number	: ----	Issue Date	: 27-Dec-2023 11:12
Sampler	: Wayne Kinbacher		
Site	: ----		
Quote number	: ----		
No. of samples received	: 2		
No. of samples analysed	: 2		



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, 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
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	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.

Analytical Results

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

Sample ID

				TCNT-IN	TCNT-OUT	----	----	----
Sampling date / time				14-Dec-2023 07:30	14-Dec-2023 07:30	----	----	----
Compound	CAS Number	LOR	Unit	ES2343388-001	ES2343388-002	-----	-----	-----
				Result	Result	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	319	330	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	32	26	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.13	0.11	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.2	2.4	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
[^] Total Nitrogen as N	----	0.1	mg/L	2.3	2.5	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.20	0.23	----	----	----



QUALITY CONTROL REPORT

Work Order	: ES2343388	Page	: 1 of 3
Client	: TOP CROC NT	Laboratory	: Environmental Division Sydney
Contact	: Wayne Kinbacher	Contact	: Customer Services ES
Address	: 1350 Old Bynoe Rd, Berry Springs NT 0838	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: TOP CROC NT CROCODILE FARM - WASTEWATER	Date Samples Received	: 14-Dec-2023
Order number	: ----	Date Analysis Commenced	: 19-Dec-2023
C-O-C number	: ----	Issue Date	: 27-Dec-2023
Sampler	: Wayne Kinbacher		
Site	: ----		
Quote number	: ----		
No. of samples received	: 2		
No. of samples analysed	: 2		



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, 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
Wisam Marassa	Inorganics Coordinator	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.

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 Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA010P: Conductivity by PC Titrator (QC Lot: 5503732)									
ES2343391-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	592	589	0.5	0% - 20%
EW2305618-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	316	316	0.0	0% - 20%
ES2343251-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	80	79	1.3	0% - 20%
ES2343719-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	6040	6070	0.5	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5505529)									
ES2343388-001	TCNT-IN	EA025H: Suspended Solids (SS)	----	5	mg/L	32	38	16.9	No Limit
ES2343524-005	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	396	417	5.1	0% - 20%
ES2343748-003	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	84	82	3.3	0% - 50%
ES2344051-004	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	491	564	13.8	0% - 20%
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5508053)									
ES2343386-006	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.05	0.05	0.0	No Limit
ES2343251-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.01	0.01	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5508056)									
ES2343378-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.6	1.6	0.0	0% - 50%
ES2343386-008	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.2	0.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5508055)									
ES2343378-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.18	0.22	15.6	0% - 20%
ES2343386-008	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.04	0.04	0.0	No Limit



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.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EA010P: Conductivity by PC Titrator (QCLot: 5503732)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	99.0	89.9	110
				<1	2100 µS/cm	98.3	90.2	111
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5505529)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	98.7	83.0	129
				<5	1000 mg/L	97.2	82.0	110
				<5	841 mg/L	104	83.0	118
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5508053)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	104	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5508056)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	88.1	69.0	101
				<0.1	1 mg/L	96.6	70.0	118
				<0.1	5 mg/L	88.7	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5508055)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	92.4	71.3	126
				<0.01	0.442 mg/L	92.9	71.3	126
				<0.01	1 mg/L	102	70.0	130

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 Concentration	SpikeRecovery(%) MS	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number			Low	High
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5508053)							
ES2343251-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	119	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5508056)							
ES2343379-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	92.6	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5508055)							
ES2343379-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	91.8	70.0	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2343388	Page	: 1 of 4
Client	: TOP CROC NT	Laboratory	: Environmental Division Sydney
Contact	: Wayne Kinbacher	Telephone	: +61-2-8784 8555
Project	: TOP CROC NT CROCODILE FARM - WASTEWATER	Date Samples Received	: 14-Dec-2023
Site	: ----	Issue Date	: 27-Dec-2023
Sampler	: Wayne Kinbacher	No. of samples received	: 2
Order number	: ----	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P) TCNT-IN, TCNT-OUT	14-Dec-2023	----	----	----	19-Dec-2023	11-Jan-2024	✔
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) TCNT-IN, TCNT-OUT	14-Dec-2023	----	----	----	20-Dec-2023	21-Dec-2023	✔
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) TCNT-IN, TCNT-OUT	14-Dec-2023	----	----	----	21-Dec-2023	11-Jan-2024	✔
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) TCNT-IN, TCNT-OUT	14-Dec-2023	21-Dec-2023	11-Jan-2024	✔	21-Dec-2023	11-Jan-2024	✔
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) TCNT-IN, TCNT-OUT	14-Dec-2023	21-Dec-2023	11-Jan-2024	✔	21-Dec-2023	11-Jan-2024	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Conductivity by Auto Titrator	EA010-P	4	24	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Conductivity by Auto Titrator	EA010-P	3	24	12.50	8.33	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Conductivity by Auto Titrator	EA010-P	2	24	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of 'non-filterable' residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)



CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADELAIDE 3/1 Burne Road Pooraka SA 5095
Ph: 08 9162 5130 E: adelaide@alsglobal.com

BRISBANE 2 Byth Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

GLADSTONE 48 Callamondah Drive Gladstone QLD 4680
Ph: 07 4978 7944 E: ALS@enviro Gladstone@alsglobal.com

MACKAY Unit 2/20 Caterpillar Drive Paget QLD 4740
Ph: 07 4562 5795 E: ALS@enviro Mackay@alsglobal.com

MELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 8549 9800 E: samples.melbourne@alsglobal.com

MUDGEE 1/29 Sydney Road Mudgee NSW 2850
Ph: 02 6372 6735 E: mudgee@mail@alsglobal.com

NEWCASTLE 5/585 Maitland Road Mayfield West NSW 2304
Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

NOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 02 4423 2063 E: nowra@alsglobal.com

PERTH 28 Rigby Way Wangara WA 6065
Ph: 08 9406 1301 E: samples.perth@alsglobal.com

SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

TOWNSVILLE 13 Carlton Street Inwon QLD 4817
Ph: 07 4773 0000 E: ALS@enviro Townsville@alsglobal.com

WOLLONGONG 1/19-21 Ralph Black Drive, Nth Wollongong NSW 2500
Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: TOP ORGANIC ENT PL TCNT		TURNAROUND REQUIREMENTS : ☐ Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
OFFICE: 1350 OLD BYNOE RD BERRY SPRINGS NT 0838		(Standard TAT may be longer for some tests e.g., Ultra Trace Organics)		Custody Seal intact? Yes No N/A	
PROJECT: TOP CROC NT CROCODILE FARM - WASTEWATER PROJECT NO.:		ALS QUOTE NO.:		Free ice / frozen ice bricks present upon receipt? Yes No N/A	
ORDER NUMBER: PURCHASE ORDER NO.:		COUNTRY OF ORIGIN:		Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: WAYNE KINBACHER		CONTACT PH: 0428886818		Other comment:	
SAMPLER: WAYNE		SAMPLER MOBILE: 0428886818		RELINQUISHED BY:	
COC Emailed to ALS? (YES / NO)		EDD FORMAT (or default):		RECEIVED BY: Charmaine Carver	
Email Reports to (will default to PM if no other addresses are listed): toporganicent@gmail.com		DATE/TIME: 14-12-23 10:53am		DATE/TIME: 10:53am	
Email Invoice to (will default to PM if no other addresses are listed): toporganicent@gmail.com		DATE/TIME: 14/12/23		DATE/TIME: 14/12/23	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)		CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	E.coli/Enterococci, Total Coliforms	TN, TP	pH, EC	BOD, TSS					Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.	
1	TCNT - IN	14-12-23	W		4	X	X	X	X						
2	TCNT - OUT	7-30 am	W		4	X	X	X	X					LAB OF ORIGIN: DARWIN Environmental Division Sydney Work Order Reference ES2343388 Telephone : + 61-2-8784 8555	
TOTAL															

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

Zac Grima

From:
Sent:
To:
Subject:

Jack Clifton
Monday, 18 December 2023 2:23 PM
Zac Grima
FW: [EXTERNAL] - Re: Freight Delay 14/12

Kind Regards,



right solutions
right partners

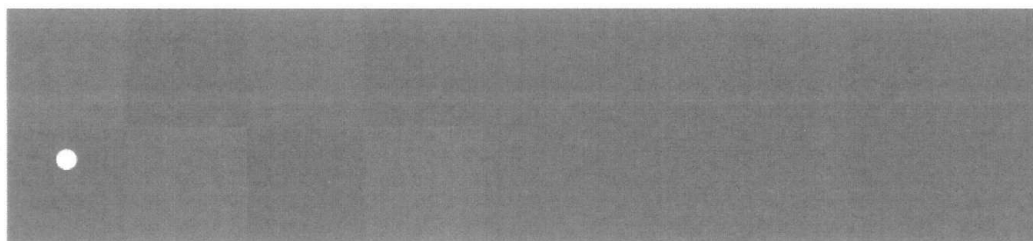
Jack Clifton
Sample Receipt Coordinator, Environmental
Sydney, NSW

O: +61 2 8784 8555
D: +61 2 8784 8532

Jack.Clifton@alsglobal.com

277-289 Woodpark Road
Smithfield NSW 2164 AUSTRALIA

alsglobal.com



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From: Lana Civelie <l.civelie@alsglobal.com>
Sent: Monday, 18 December 2023 2:04 PM

To: Samples Sydney <Samples.Sydney@alsglobal.com>; JONATHAN WALKER <jonathan.walker@alsglobal.com>
Subject: FW: [EXTERNAL] - Re: Freight Delay 14/12

Hi SR,

Update for delayed WO - TOPCROC ES2343388 & ES2343431.

Charmaine confirmed via phone conversation to only go ahead with what is in holding time.

Thus, no micro, pH or BOD.

Thanks!



Kind regards,

Lana Civelle
Environmental Services Officer
Darwin, Australia

P: +61 08 8942 2608

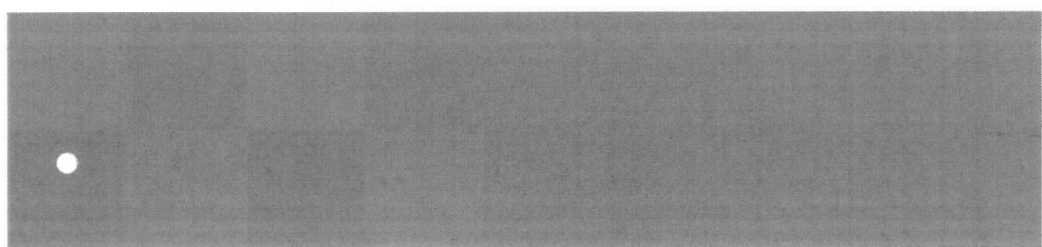
l.civelle@alsglobal.com

Unit 4/16 Charlton Court
Woolner, NT, 0820

alsglobal.com



Please note: Sample receipt times for the Darwin office is 8:30 am - 2:00 pm
Monday to Thursday. There is no sample dispatch on Fridays



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From: [charmaine carter <toporganisent@gmail.com>](mailto:charmaine.carter@toporganisent@gmail.com)
Sent: Monday, 18 December 2023 12:03 PM
To: Lana Civelle <l.civelle@alsglobal.com>
Subject: [EXTERNAL] - Re: Freight Delay 14/12

You don't often get email from toporganisent@gmail.com. Learn why this is important

CAUTION: This email originated from outside of ALS. Do not click links or open attachments unless you recognize the sender and are sure content is relevant to you.

ok and now I have to wait until the new year... I will see you then we cant control the weather thanks for the update

On Mon, Dec 18, 2023 at 11:12 AM Lana Civelle <l.civelle@alsglobal.com> wrote:

Good morning Charmaine,

I regret to inform you that Thursday's overnight courier service was delayed due to a freight issue while transiting through Brisbane due to bad weather, and eskys only arrived this morning to the Sydney laboratory. We were expecting a late delivery, however it appears they did not make it Friday night.

Thus, micro samples would now be considered compromised. Would you like to proceed with the analysis?



CERTIFICATE OF ANALYSIS

Work Order : **ES2401275**
Client : **TOP CROC NT**
Contact : TOP ORGANICENT
Address : 1350 Old Bynoe Rd, Berry Springs NT
0838
Telephone : ----
Project : TOP CROC NT CROCODILE FARM - SURFACEWATER
Order number : ----
C-O-C number : ----
Sampler : Wayne Kinbacher
Site : ----
Quote number : ----
No. of samples received : 4
No. of samples analysed : 4

Page : 1 of 3
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 17-Jan-2024 08:30
Date Analysis Commenced : 17-Jan-2024
Issue Date : 12-Feb-2024 10:41



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, 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
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Dian Dao	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Sarah Griffiths	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 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.

- 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.
- MW006 is ALS's internal code and is equivalent to AS4276.5.
- MW023 is ALS's internal code and is equivalent to AS4276.9.
- MW007 is ALS's internal code and is equivalent to AS4276.5.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	TCNT - SW1	TCNT - SW2	TCNT - SW3	TCNT - SW4	----
Sampling date / time					16-Jan-2024 09:30	16-Jan-2024 09:45	16-Jan-2024 09:40	16-Jan-2024 09:30	----
Compound	CAS Number	LOR	Unit		ES2401275-001	ES2401275-002	ES2401275-003	ES2401275-004	-----
					Result	Result	Result	Result	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		6.18	3.61	6.27	4.49	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		20	145	37	48	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		<5	<5	10	29	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.12	0.04	0.08	0.01	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.5	0.6	0.6	0.9	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.6	0.6	0.7	0.9	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.02	0.06	0.07	0.05	----
EP030: Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	----	2	mg/L		<2	<2	2	<2	----
MW006: Thermotolerant Coliforms & E.coli by MF									
<i>Escherichia coli</i>	----	1	CFU/100mL		180	220	1000	240	----
MW007: Coliforms by MF									
Coliforms	----	1	CFU/100mL		38000	14000	35000	43000	----
MW023: Enterococci by Membrane Filtration									
<i>Enterococci</i>	----	1	CFU/100mL		1100	930	1400	~230	----



QUALITY CONTROL REPORT

Work Order : **ES2401275**

Page : 1 of 5

Client : **TOP CROC NT**

Laboratory : Environmental Division Sydney

Contact : TOP ORGANICENT

Contact : Customer Services ES

Address : 1350 Old Bynoe Rd, Berry Springs NT
0838

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61-2-8784 8555

Project : TOP CROC NT CROCODILE FARM - SURFACEWATER

Date Samples Received : 17-Jan-2024

Order number : ----

Date Analysis Commenced : 17-Jan-2024

C-O-C number : ----

Issue Date : 12-Feb-2024

Sampler : Wayne Kinbacher

Site : ----

Quote number : ----

No. of samples received : 4

No. of samples analysed : 4



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, 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
Dian Dao	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Sarah Griffiths	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.

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

* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

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 Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA005P: pH by PC Titrator (QC Lot: 5546001)									
ES2400979-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.40	8.44	0.5	0% - 20%
ES2401411-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.93	7.03	1.4	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 5545999)									
ES2401275-004	TCNT - SW4	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	48	52	7.4	0% - 20%
ES2400979-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1980	1990	0.3	0% - 20%
ES2401411-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	448	464	3.4	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5553854)									
ES2401274-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	11	12	0.0	No Limit
ES2401382-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2401494-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	5	5	0.0	No Limit
EW2400240-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	26	24	4.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5552480)									
ES2401358-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01 (0.50)*	mg/L	<0.50	<0.50	0.0	No Limit
ES2401451-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	29.7	29.2	1.4	0% - 20%
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5552968)									
ES2401344-013	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.43	0.43	0.0	0% - 20%
ES2401644-005	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.29	0.29	0.0	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5552474)									
ES2401274-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	0.8	0.0	No Limit
ES2401477-004	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (1.0)*	mg/L	26.3	22.5	15.6	0% - 20%

Page : 3 of 5
 Work Order : ES2401275
 Client : TOP CROC NT
 Project : TOP CROC NT CROCODILE FARM - SURFACEWATER



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 (%)
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5552964)									
ES2401275-004	TCNT - SW4	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	0.9	0.0	No Limit
ES2401596-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (0.5)*	mg/L	58.9	60.2	2.2	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5552475)									
ES2401274-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.15	0.18	20.0	0% - 50%
ES2401477-004	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.10)*	mg/L	13.5	13.2	2.6	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5552965)									
ES2401275-004	TCNT - SW4	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.05	0.04	28.1	No Limit
ES2401596-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	1.46	1.41	3.6	0% - 20%
EP030: Biochemical Oxygen Demand (BOD) (QC Lot: 5545794)									
ES2401262-002	Anonymous	EP030: Biochemical Oxygen Demand	----	2	mg/L	11	3	117	No Limit
ES2401317-001	Anonymous	EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	<2	0.0	No Limit



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.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EA005P: pH by PC Titrator (QCLot: 5546001)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	99.2	98.8	101
				----	7 pH Unit	100	99.2	101
EA010P: Conductivity by PC Titrator (QCLot: 5545999)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	98.6	89.9	110
				<1	2100 µS/cm	109	90.2	111
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5553854)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	102	83.0	129
				<5	1000 mg/L	95.8	82.0	110
				<5	841 mg/L	100	83.0	118
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5552480)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	105	91.0	113
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5552968)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	103	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5552474)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	99.4	69.0	101
				<0.1	1 mg/L	94.6	70.0	118
				<0.1	5 mg/L	99.4	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5552964)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	101	69.0	101
				<0.1	1 mg/L	105	70.0	118
				<0.1	5 mg/L	96.5	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5552475)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	104	71.3	126
				<0.01	0.442 mg/L	107	71.3	126
				<0.01	1 mg/L	114	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5552965)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	102	71.3	126
				<0.01	0.442 mg/L	107	71.3	126
				<0.01	1 mg/L	108	70.0	130
EP030: Biochemical Oxygen Demand (BOD) (QCLot: 5545794)								
EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	200 mg/L	99.5	74.0	112



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 Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5552480)							
ES2401358-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	25 mg/L	102	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5552968)							
ES2401344-013	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	85.6	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5552474)							
ES2401274-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	106	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5552964)							
ES2401344-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	89.3	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5552475)							
ES2401274-002	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	111	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5552965)							
ES2401344-002	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	104	70.0	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2401275	Page	: 1 of 5
Client	: TOP CROC NT	Laboratory	: Environmental Division Sydney
Contact	: TOP ORGANICENT	Telephone	: +61-2-8784 8555
Project	: TOP CROC NT CROCODILE FARM - SURFACEWATER	Date Samples Received	: 17-Jan-2024
Site	: ----	Issue Date	: 12-Feb-2024
Sampler	: Wayne Kinbacher	No. of samples received	: 4
Order number	: ----	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
TCNT - SW1,	TCNT - SW2,	----	----	----	17-Jan-2024	16-Jan-2024	1
TCNT - SW3,	TCNT - SW4						

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) TCNT - SW1, TCNT - SW3,	TCNT - SW2, TCNT - SW4	16-Jan-2024	----	----	----	17-Jan-2024	16-Jan-2024	✖
EA010P: Conductivity by PC Titrator								
Clear Plastic Bottle - Natural (EA010-P) TCNT - SW1, TCNT - SW3,	TCNT - SW2, TCNT - SW4	16-Jan-2024	----	----	----	17-Jan-2024	13-Feb-2024	✔
EA025: Total Suspended Solids dried at 104 ± 2°C								
Clear Plastic Bottle - Natural (EA025H) TCNT - SW1, TCNT - SW3,	TCNT - SW2, TCNT - SW4	16-Jan-2024	----	----	----	22-Jan-2024	23-Jan-2024	✔
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) TCNT - SW1, TCNT - SW3,	TCNT - SW2, TCNT - SW4	16-Jan-2024	----	----	----	22-Jan-2024	13-Feb-2024	✔
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK061G) TCNT - SW1, TCNT - SW3	TCNT - SW2,	16-Jan-2024	20-Jan-2024	13-Feb-2024	✔	20-Jan-2024	13-Feb-2024	✔
Clear Plastic Bottle - Sulfuric Acid (EK061G) TCNT - SW4		16-Jan-2024	22-Jan-2024	13-Feb-2024	✔	22-Jan-2024	13-Feb-2024	✔



Matrix: **WATER** Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EK067G: Total Phosphorus as P by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK067G) TCNT - SW1, TCNT - SW3	TCNT - SW2,	16-Jan-2024	20-Jan-2024	13-Feb-2024	✓	20-Jan-2024	13-Feb-2024	✓
Clear Plastic Bottle - Sulfuric Acid (EK067G) TCNT - SW4		16-Jan-2024	22-Jan-2024	13-Feb-2024	✓	22-Jan-2024	13-Feb-2024	✓
EP030: Biochemical Oxygen Demand (BOD)								
Clear Plastic Bottle - Natural (EP030) TCNT - SW1, TCNT - SW3,	TCNT - SW2, TCNT - SW4	16-Jan-2024	----	----	----	17-Jan-2024	18-Jan-2024	✓
MW006: Thermotolerant Coliforms & E.coli by MF								
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) TCNT - SW1, TCNT - SW3,	TCNT - SW2, TCNT - SW4	16-Jan-2024	----	----	----	17-Jan-2024	17-Jan-2024	✓
MW007: Coliforms by MF								
Sterile Plastic Bottle - Sodium Thiosulfate (MW007) TCNT - SW1, TCNT - SW3,	TCNT - SW2, TCNT - SW4	16-Jan-2024	----	----	----	17-Jan-2024	17-Jan-2024	✓
MW023: Enterococci by Membrane Filtration								
Sterile Plastic Bottle - Sodium Thiosulfate (MW023) TCNT - SW1, TCNT - SW3,	TCNT - SW2, TCNT - SW4	16-Jan-2024	----	----	----	17-Jan-2024	17-Jan-2024	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Biochemical Oxygen Demand (BOD)	EP030	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	3	20	15.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	4	38	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Biochemical Oxygen Demand (BOD)	EP030	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	3	20	15.00	8.33	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	6	39	15.38	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	6	38	15.79	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Biochemical Oxygen Demand (BOD)	EP030	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	2	20	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of 'non-filterable' residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Biochemical Oxygen Demand (BOD)	EP030	WATER	In house: Referenced to APHA 5210 B. The 5-Day BOD test provides an empirical measure of the oxygen consumption capacity of a given water. A portion of the sample is diluted into oxygenated, nutrient rich water, and a seed added to begin biological decay. The initial dissolved oxygen content is measured, then the bottle is sealed and incubated for five days. The remaining dissolved oxygen is measured, and from the difference, the demand for oxygen, by biological decay, is determined. This method is compliant with NEPM Schedule B(3).
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	AS 4276.7
Coliforms by Membrane Filtration	MW007	WATER	AS 4276.5
Enumeration of Enterococci by Membrane Filtration	MW023	WATER	AS4276.9
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)

CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADELAIDE 3/1 Burma Road Pooraka SA 5095
Ph: 08 8162 5130 E: adelaide@aleglobal.com

BRISBANE 2 Byth Street Stafford QLD 4053
Ph: 07 3343 7222 E: samples.brisbane@aisglobal.com

GLADSTONE 48 Callemondah Drive Gladstone QLD 4680
Ph: 07 4978 7944 E: Al.SEnviro.Gladstone@atsrcobal.com

LIMACKAY Unit 2/20 Caterpillar Drive Paget QLD 4740
Ph: 07 4952 5795 E: ALSEnviro.Mackay@alsglobal.com

MELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 9549 8600 E: samples.melbourne@alsglobal.com

MUDGEES 1/29 Sydney Road Mudgee NSW 2850
Ph: 02 6372 6735 E: mudgee.mail@elsglobal.com

NEWCASTLE 5685 Maitland Road Mayfield West NSW 2304
Ph. 02 4014 2600 E. samples.newcastle@alsglobal.com

□NOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 02 4423 2063 E: nowra@alsglobal.com

□PERTH 26 Rigali Way Wangara WA 6065
Ph: 08 9406 1301 E: samples.perth@aisglobal.com

□SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydnev@lsiglobal.com

□TOWNSVILLE 13 Carlton Street Kiwan QLD 4817
Ph: 07 4773 0000 E: ALSEnviro.Townsville@alsglobal.com

WOLLONGONG 1/19-21 Ralph Black Drive, Nth Wollongong NSW 2500
Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: TOP CROC NT - TCNT		TURNAROUND REQUIREMENTS: ☒ Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
OFFICE: 1350 OLD BYNOE RD BERRY SPRINGS NT 0838		(Standard TAT may be longer for some tests e.g., Ultra Trace Organics)		Custody Seal Intact? Yes No N/A	
PROJECT: TOP CROC NT CROCODILE FARM - SURFACEWATER PROJECT NO.:		ALS QUOTE NO.:		Free ice / frozen ice bricks present upon receipt? Yes No N/A	
ORDER NUMBER: PURCHASE ORDER NO.:		COUNTRY OF ORIGIN:		Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: WAYNE KINBACHER		CONTACT PH: 0428886818		Other comment:	
SAMPLER: WAYNE		SAMPLER MOBILE: 0428886818		RELINQUISHED BY:	
COC Emailed to ALS? (YES / NO)		EDD FORMAT (or default):		RECEIVED BY:	
Email Reports to (will default to PM if no other addresses are listed): toporganicnt@gmail.com		DATE/TIME:		DATE/TIME:	
Email Invoice to (will default to PM if no other addresses are listed): toporganicnt@gmail.com		DATE/TIME:		DATE/TIME:	
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:					

[illegible]

Water Container Code
V = VOA Vial HCl Pres
Z = Zinc Acetate Pres

Telephone : + 61-2-8784 8555

C = Nitric Preserved ORC: SH = Sodium Hydroxide/Cd Preserved: S = Sodium Hydroxide Preserved Plastic: AG = Amber Glass Unpreserved: AP - Airfreight Unpreserved Plastic

A Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Specialion bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; I = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.



CERTIFICATE OF ANALYSIS

Work Order	: ES2401274	Page	: 1 of 3
Client	: TOP CROC NT	Laboratory	: Environmental Division Sydney
Contact	: TOP ORGANICENT	Contact	: Customer Services ES
Address	: 1350 Old Bynoe Rd, Berry Springs NT 0838	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: TOP CROC NT CROCODILE FARM - WASTEWATER	Date Samples Received	: 17-Jan-2024 08:30
Order number	: ----	Date Analysis Commenced	: 17-Jan-2024
C-O-C number	: ----	Issue Date	: 12-Feb-2024 10:41
Sampler	: Wayne Kinbacher		
Site	: ----		
Quote number	: ----		
No. of samples received	: 2		
No. of samples analysed	: 2		



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, 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
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Sarah Griffiths	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 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.

- 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.
- MW006 is ALS's internal code and is equivalent to AS4276.5.
- MW023 is ALS's internal code and is equivalent to AS4276.9.
- MW007 is ALS's internal code and is equivalent to AS4276.5.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	TCNT - IN	TCNT - OUT	----	----	----
Sampling date / time					16-Jan-2024 09:00	16-Jan-2024 09:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2401274-001	ES2401274-002	-----	-----	-----
				Result	Result		----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		6.73	5.49	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		79	70	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		11	12	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		1.05	2.45	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.9	1.7	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
[^] Total Nitrogen as N	----	0.1	mg/L		2.0	4.2	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.15	0.19	----	----	----
EP030: Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	----	2	mg/L		<2	<2	----	----	----
MW006: Thermotolerant Coliforms & E.coli by MF									
<i>Escherichia coli</i>	----	1	CFU/100mL		1500	1200	----	----	----
MW007: Coliforms by MF									
Coliforms	----	1	CFU/100mL		58000	42000	----	----	----
MW023: Enterococci by Membrane Filtration									
<i>Enterococci</i>	----	1	CFU/100mL		3000	2800	----	----	----



QUALITY CONTROL REPORT

Work Order	: ES2401274	Page	: 1 of 5
Client	: TOP CROC NT	Laboratory	: Environmental Division Sydney
Contact	: TOP ORGANICENT	Contact	: Customer Services ES
Address	: 1350 Old Bynoe Rd, Berry Springs NT 0838	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: TOP CROC NT CROCODILE FARM - WASTEWATER	Date Samples Received	: 17-Jan-2024
Order number	: ----	Date Analysis Commenced	: 17-Jan-2024
C-O-C number	: ----	Issue Date	: 12-Feb-2024
Sampler	: Wayne Kinbacher		
Site	: ----		
Quote number	: ----		
No. of samples received	: 2		
No. of samples analysed	: 2		



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, 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
Sarah Griffiths	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.

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
 * = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

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 Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA005P: pH by PC Titrator (QC Lot: 5546001)									
ES2400979-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.40	8.44	0.5	0% - 20%
ES2401411-002	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	6.93	7.03	1.4	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 5545999)									
ES2401275-004	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	48	52	7.4	0% - 20%
ES2400979-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1980	1990	0.3	0% - 20%
ES2401411-002	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	448	464	3.4	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5553854)									
ES2401274-001	TCNT - IN	EA025H: Suspended Solids (SS)	----	5	mg/L	11	12	0.0	No Limit
ES2401382-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
ES2401494-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	5	5	0.0	No Limit
EW2400240-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	26	24	4.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5552480)									
ES2401358-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01 (0.50)*	mg/L	<0.50	<0.50	0.0	No Limit
ES2401451-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	29.7	29.2	1.4	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5552474)									
ES2401274-001	TCNT - IN	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.9	0.8	0.0	No Limit
ES2401477-004	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (1.0)*	mg/L	26.3	22.5	15.6	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5552475)									
ES2401274-001	TCNT - IN	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.15	0.18	20.0	0% - 50%
ES2401477-004	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (0.10)*	mg/L	13.5	13.2	2.6	0% - 20%



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 (%)
EP030: Biochemical Oxygen Demand (BOD) (QC Lot: 5545794)									
ES2401262-002	Anonymous	EP030: Biochemical Oxygen Demand	----	2	mg/L	11	3	117	No Limit
ES2401317-001	Anonymous	EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	<2	0.0	No Limit



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.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EA005P: pH by PC Titrator (QCLot: 5546001)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	99.2	98.8	101
				----	7 pH Unit	100	99.2	101
EA010P: Conductivity by PC Titrator (QCLot: 5545999)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	98.6	89.9	110
				<1	2100 µS/cm	109	90.2	111
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5553854)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	102	83.0	129
				<5	1000 mg/L	95.8	82.0	110
				<5	841 mg/L	100	83.0	118
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5552480)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	105	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5552474)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	99.4	69.0	101
				<0.1	1 mg/L	94.6	70.0	118
				<0.1	5 mg/L	99.4	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5552475)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	104	71.3	126
				<0.01	0.442 mg/L	107	71.3	126
				<0.01	1 mg/L	114	70.0	130
EP030: Biochemical Oxygen Demand (BOD) (QCLot: 5545794)								
EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	200 mg/L	99.5	74.0	112

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 Concentration	Spike Recovery (%) MS	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number			Low	High
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5552480)							
ES2401358-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	25 mg/L	102	70.0	130



Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
				Concentration	MS	Low	High
Laboratory sample ID	Sample ID	Method: Compound	CAS Number				
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5552474)							
ES2401274-002	TCNT - OUT	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	106	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5552475)							
ES2401274-002	TCNT - OUT	EK067G: Total Phosphorus as P	----	1 mg/L	111	70.0	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2401274	Page	: 1 of 5
Client	: TOP CROC NT	Laboratory	: Environmental Division Sydney
Contact	: TOP ORGANICENT	Telephone	: +61-2-8784 8555
Project	: TOP CROC NT CROCODILE FARM - WASTEWATER	Date Samples Received	: 17-Jan-2024
Site	: ----	Issue Date	: 12-Feb-2024
Sampler	: Wayne Kinbacher	No. of samples received	: 2
Order number	: ----	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural						
TCNT - IN, TCNT - OUT	----	----	----	17-Jan-2024	16-Jan-2024	1

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) TCNT - IN, TCNT - OUT	16-Jan-2024	----	----	----	17-Jan-2024	16-Jan-2024	✖
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P) TCNT - IN, TCNT - OUT	16-Jan-2024	----	----	----	17-Jan-2024	13-Feb-2024	✔
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) TCNT - IN, TCNT - OUT	16-Jan-2024	----	----	----	22-Jan-2024	23-Jan-2024	✔
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) TCNT - IN, TCNT - OUT	16-Jan-2024	----	----	----	22-Jan-2024	13-Feb-2024	✔
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) TCNT - IN, TCNT - OUT	16-Jan-2024	20-Jan-2024	13-Feb-2024	✔	20-Jan-2024	13-Feb-2024	✔
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) TCNT - IN, TCNT - OUT	16-Jan-2024	20-Jan-2024	13-Feb-2024	✔	20-Jan-2024	13-Feb-2024	✔
EP030: Biochemical Oxygen Demand (BOD)							
Clear Plastic Bottle - Natural (EP030) TCNT - IN, TCNT - OUT	16-Jan-2024	----	----	----	17-Jan-2024	18-Jan-2024	✔

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
MW006: Thermotolerant Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) TCNT - IN, TCNT - OUT	16-Jan-2024	----	----	----	17-Jan-2024	17-Jan-2024	✓
MW007: Coliforms by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW007) TCNT - IN, TCNT - OUT	16-Jan-2024	----	----	----	17-Jan-2024	17-Jan-2024	✓
MW023: Enterococci by Membrane Filtration							
Sterile Plastic Bottle - Sodium Thiosulfate (MW023) TCNT - IN, TCNT - OUT	16-Jan-2024	----	----	----	17-Jan-2024	17-Jan-2024	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Biochemical Oxygen Demand (BOD)	EP030	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	3	20	15.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Biochemical Oxygen Demand (BOD)	EP030	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	3	20	15.00	8.33	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Biochemical Oxygen Demand (BOD)	EP030	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	2	20	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of 'non-filterable' residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Biochemical Oxygen Demand (BOD)	EP030	WATER	In house: Referenced to APHA 5210 B. The 5-Day BOD test provides an empirical measure of the oxygen consumption capacity of a given water. A portion of the sample is diluted into oxygenated, nutrient rich water, and a seed added to begin biological decay. The initial dissolved oxygen content is measured, then the bottle is sealed and incubated for five days. The remaining dissolved oxygen is measured, and from the difference, the demand for oxygen, by biological decay, is determined. This method is compliant with NEPM Schedule B(3).
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	AS 4276.7
Coliforms by Membrane Filtration	MW007	WATER	AS 4276.5
Enumeration of Enterococci by Membrane Filtration	MW023	WATER	AS4276.9
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)



CERTIFICATE OF ANALYSIS

Work Order : **ES2409113**
Client : **TOP CROC NT**
Contact : Wayne Kinbacher
Address : 1350 Old Bynoe Rd, Berry Springs NT
0838
Telephone : ----
Project : TOP CROC NT CROCODILE FARM - GROUND WATER
Order number : ----
C-O-C number : ----
Sampler : Wayne Kinbacher
Site : ----
Quote number : ----
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 3
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 21-Mar-2024 16:30
Date Analysis Commenced : 21-Mar-2024
Issue Date : 04-Apr-2024 11:58



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, 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
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Sarah Griffiths	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 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.

- 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.
- MW006 is ALS's internal code and is equivalent to AS4276.5.
- 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.
- MW023 is ALS's internal code and is equivalent to AS4276.9.
- MW007 is ALS's internal code and is equivalent to AS4276.5.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	TCNT - GW	----	----	----	----
Sampling date / time					20-Mar-2024 08:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2409113-001	-----	-----	-----	-----
				Result		----	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.94	----	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		368	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		1.1	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		1.1	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.03	----	----	----	----
MW006: Thermotolerant Coliforms & E.coli by MF									
Escherichia coli	----	1	CFU/100mL		~<1	----	----	----	----
MW007: Coliforms by MF									
Coliforms	----	1	CFU/100mL		~480	----	----	----	----
MW023: Enterococci by Membrane Filtration									
Enterococci	----	1	CFU/100mL		<1	----	----	----	----



QUALITY CONTROL REPORT

Work Order	: ES2409113	Page	: 1 of 3
Client	: TOP CROC NT	Laboratory	: Environmental Division Sydney
Contact	: Wayne Kinbacher	Contact	: Customer Services ES
Address	: 1350 Old Bynoe Rd, Berry Springs NT 0838	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: TOP CROC NT CROCODILE FARM - GROUND WATER	Date Samples Received	: 21-Mar-2024
Order number	: ----	Date Analysis Commenced	: 21-Mar-2024
C-O-C number	: ----	Issue Date	: 04-Apr-2024
Sampler	: Wayne Kinbacher		
Site	: ----		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		



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, 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
Sarah Griffiths	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.

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 Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA005P: pH by PC Titrator (QC Lot: 5685627)									
ES2409111-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	5.96	5.88	1.4	0% - 20%
ES2409125-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	4.82	4.65	3.6	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 5685626)									
ES2409111-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	14	13	9.2	0% - 50%
ES2409439-003	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	10500	10500	0.0	0% - 20%
ES2409125-004	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	32	34	4.3	0% - 20%
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5683722)									
ES2408892-013	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.60	0.60	0.0	0% - 20%
ES2409125-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.01	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5683728)									
ES2409113-001	TCNT - GW	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.1	1.2	0.0	0% - 50%
ES2409126-004	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.2	0.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5683727)									
ES2409113-001	TCNT - GW	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.03	0.04	0.0	No Limit
ES2409126-004	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit



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.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit		Result	Concentration	LCS	Low
EA005P: pH by PC Titrator (QCLot: 5685627)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98.8	101
				----	7 pH Unit	99.7	99.2	101
EA010P: Conductivity by PC Titrator (QCLot: 5685626)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	97.4	89.9	110
				<1	2100 µS/cm	101	90.2	111
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5683722)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	104	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5683728)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	91.5	69.0	123
				<0.1	1 mg/L	95.6	70.0	123
				<0.1	5 mg/L	97.1	70.0	123
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5683727)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	98.3	71.3	126
				<0.01	0.442 mg/L	96.4	71.3	126
				<0.01	1 mg/L	106	70.0	130

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 Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5683722)							
ES2408892-013	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	118	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5683728)							
ES2409125-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	105	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5683727)							
ES2409125-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	104	70.0	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2409113	Page	: 1 of 5
Client	: TOP CROC NT	Laboratory	: Environmental Division Sydney
Contact	: Wayne Kinbacher	Telephone	: +61-2-8784 8555
Project	: TOP CROC NT CROCODILE FARM - GROUND WATER	Date Samples Received	: 21-Mar-2024
Site	: ----	Issue Date	: 04-Apr-2024
Sampler	: Wayne Kinbacher	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural TCNT - GW	----	----	----	25-Mar-2024	20-Mar-2024	5

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) TCNT - GW	20-Mar-2024	----	----	----	25-Mar-2024	20-Mar-2024	✖
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P) TCNT - GW	20-Mar-2024	----	----	----	25-Mar-2024	17-Apr-2024	✔
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) TCNT - GW	20-Mar-2024	----	----	----	25-Mar-2024	17-Apr-2024	✔
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) TCNT - GW	20-Mar-2024	25-Mar-2024	17-Apr-2024	✔	25-Mar-2024	17-Apr-2024	✔
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) TCNT - GW	20-Mar-2024	25-Mar-2024	17-Apr-2024	✔	25-Mar-2024	17-Apr-2024	✔
MW006: Thermotolerant Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) TCNT - GW	20-Mar-2024	----	----	----	21-Mar-2024	21-Mar-2024	✔
MW007: Coliforms by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW007) TCNT - GW	20-Mar-2024	----	----	----	21-Mar-2024	21-Mar-2024	✔



Matrix: WATER

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
MW023: Enterococci by Membrane Filtration							
Sterile Plastic Bottle - Sodium Thiosulfate (MW023) TCNT - GW	20-Mar-2024	----	----	----	21-Mar-2024	21-Mar-2024	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Conductivity by Auto Titrator	EA010-P	3	28	10.71	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Conductivity by Auto Titrator	EA010-P	3	28	10.71	8.33	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	14	21.43	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	15	20.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Conductivity by Auto Titrator	EA010-P	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	AS 4276.7
Coliforms by Membrane Filtration	MW007	WATER	AS 4276.5
Enumeration of Enterococci by Membrane Filtration	MW023	WATER	AS4276.9
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)



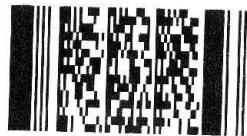
CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADELAIDE 3/1 Burner Road Port Adelaide SA 5015
Ph: 08 8162 5130 E: adelaide@alsglobal.comBRISBANE 2 Byth Street Stafford QLD 4055
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.comGLADSTONE 48 Callamondah Drive Gladstone QLD 4660
Ph: 07 4976 7944 E: ALE@enviro.gladstone@alsglobal.comMACKAY Unit 2/20 Caterpillar Drive Paget QLD 4740
Ph: 07 4862 5795 E: ALE@enviro.mackay@alsglobal.comMELBOURNE 2/4 Westall Road Springvale VIC 3171
Ph: 03 8549 9800 E: samples.melbourne@alsglobal.comMUDGEE 1/29 Sydney Road Mudgee NSW 2850
Ph: 02 6372 6736 E: mudgee.nati@alsglobal.comNEWCASTLE 5/585 Maitland Road Mayfield West NSW 2304
Ph: 02 4014 2600 E: samples.newcastle@alsglobal.comNEWCASTLE 4/13 Geary Place North Nowra NSW 2541
Ph: 02 4425 2060 E: nowra@alsglobal.comPERTH 1/25 Rignall Way Wangara WA 8085
Ph: 08 9406 1361 E: samples.perth@alsglobal.comSYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.comTOWNSVILLE 13 Carlton Street Kivara QLD 4817
Ph: 07 4773 0090 E: ALE@enviro.townsville@alsglobal.comWOLLONGONG 1/19-21 Ralph Black Drive Nth Wollongong NSW 2500
Ph: 02 4226 3135 E: wollongong@alsglobal.com

CLIENT: TOP ORGANIC ENT PL - TCNT		TURNAROUND REQUIREMENTS : ☐ Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
OFFICE: 1350 OLD BYNOE RD BERRY SPRINGS NT 0838		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		Custody Seal Intact? Yes No N/A	
PROJECT: TOP CROC NT CROCODILE FARM - GROUND WATER PROJECT NO.:		☐ Non Standard or urgent TAT (List due date):		Free ice / frozen ice bricks present upon receipt? Yes No N/A	
ORDER NUMBER: PURCHASE ORDER NO.:		ALS QUOTE NO.:		Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: WAYNE KINBACHER		COUNTRY OF ORIGIN:		Other comment:	
CONTACT PH: 0428886818		COC SEQUENCE NUMBER (Circle)			
SAMPLER: WAYNE		COC: 1 2 3 4 5 6 7			
SAMPLER MOBILE: 0428886818		OF: 1 2 3 4 5 6 7			
COC Emailed to ALS? (YES / NO)		RELINQUISHED BY: Charmaine Carter		RECEIVED BY: [Signature] 1:18u	
Email Reports to (will default to PM if no other addresses are listed): toporganicent@gmail.com		DATE/TIME: 20.3.24 1.18pm		DATE/TIME: 20/3	
Email Invoice to (will default to PM if no other addresses are listed): toporganicent@gmail.com		RELINQUISHED BY:		RECEIVED BY: Jonathan 1630	
		DATE/TIME:		DATE/TIME: 21/3/24 [Signature]	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)		CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information	
LAB ID		SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	E.coli, Enterococci, Total Coliforms	TN, TP	pH, EC				Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.	
1		TCNT - GW	20.3.24 8am	W		4	X	X	X					
													LAB OF ORIGIN: DARWIN Environmental Division Sydney Work Order Reference ES2409113  Telephone : + 61-2-8784 8555	
TOTAL														

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.



CERTIFICATE OF ANALYSIS

Work Order : **ES2409111**
Client : **TOP CROC NT**
Contact : Wayne Kinbacher
Address : 1350 Old Bynoe Rd, Berry Springs NT
0838
Telephone : ----
Project : TOP CROC NT CROCODILE FARM - SURFACEWATER
Order number : ----
C-O-C number : ----
Sampler : Wayne Kinbacher
Site : ----
Quote number : ----
No. of samples received : 4
No. of samples analysed : 4

Page : 1 of 3
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 21-Mar-2024 16:30
Date Analysis Commenced : 21-Mar-2024
Issue Date : 04-Apr-2024 12:00



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, 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
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Sarah Griffiths	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 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.

- 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.
- MW006 is ALS's internal code and is equivalent to AS4276.5.
- Microbiological Comment: ES2409111 – 02 - 04 results for MW006 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.
- MW023 is ALS's internal code and is equivalent to AS4276.9.
- MW007 is ALS's internal code and is equivalent to AS4276.5.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	TCNT - SW1	TCNT - SW2	TCNT - SW3	TCNT - SW4	----
Sampling date / time					20-Mar-2024 08:00	20-Mar-2024 08:00	20-Mar-2024 08:00	20-Mar-2024 08:00	----
Compound	CAS Number	LOR	Unit		ES2409111-001	ES2409111-002	ES2409111-003	ES2409111-004	-----
					Result	Result	Result	Result	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		5.96	6.28	6.84	7.06	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		14	20	44	44	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		14	<5	<5	6	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.08	0.07	<0.01	0.01	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.4	0.8	0.4	0.6	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
[^] Total Nitrogen as N	----	0.1	mg/L		0.5	0.9	0.4	0.6	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.02	0.05	0.02	0.01	----
EP030: Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	----	2	mg/L		4	10	4	6	----
MW006: Thermotolerant Coliforms & E.coli by MF									
<i>Escherichia coli</i>	----	1	CFU/100mL		~4	~110	~12	~35	----
MW007: Coliforms by MF									
Coliforms	----	1	CFU/100mL		19000	31000	87000	65000	----
MW023: Enterococci by Membrane Filtration									
<i>Enterococci</i>	----	1	CFU/100mL		~1	~2	100	54	----



QUALITY CONTROL REPORT

Work Order : **ES2409111**

Page : 1 of 5

Client : **TOP CROC NT**

Laboratory : Environmental Division Sydney

Contact : Wayne Kinbacher

Contact : Customer Services ES

Address : 1350 Old Bynoe Rd, Berry Springs NT
0838

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : ----

Telephone : +61-2-8784 8555

Project : TOP CROC NT CROCODILE FARM - SURFACEWATER

Date Samples Received : 21-Mar-2024

Order number : ----

Date Analysis Commenced : 21-Mar-2024

C-O-C number : ----

Issue Date : 04-Apr-2024

Sampler : Wayne Kinbacher

Site : ----

Quote number : ----

No. of samples received : 4

No. of samples analysed : 4



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, 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
Sarah Griffiths	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.

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 Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA005P: pH by PC Titrator (QC Lot: 5685627)									
ES2409111-001	TCNT - SW1	EA005-P: pH Value	----	0.01	pH Unit	5.96	5.88	1.4	0% - 20%
ES2409125-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	4.82	4.65	3.6	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 5685626)									
ES2409111-001	TCNT - SW1	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	14	13	9.2	0% - 50%
ES2409439-003	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	10500	10500	0.0	0% - 20%
ES2409125-004	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	32	34	4.3	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5687182)									
ES2409033-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	20	17	14.8	No Limit
ES2409111-002	TCNT - SW2	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	5	0.0	No Limit
ES2409400-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	346	338	2.3	0% - 20%
ES2409729-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	5	5	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5683722)									
ES2408892-013	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.60	0.60	0.0	0% - 20%
ES2409125-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.01	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5683726)									
ES2409045-003	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.2	0.0	No Limit
ES2409045-010	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	0.1	0.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5683725)									
ES2409045-003	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.01	0.0	No Limit
ES2409045-010	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EP030: Biochemical Oxygen Demand (BOD) (QC Lot: 5679591)									
ES2409046-001	Anonymous	EP030: Biochemical Oxygen Demand	----	2	mg/L	6	12	61.0	No Limit

Page : 3 of 5
Work Order : ES2409111
Client : TOP CROC NT
Project : TOP CROC NT CROCODILE FARM - SURFACEWATER



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 (%)
EP030: Biochemical Oxygen Demand (BOD) (QC Lot: 5679591) - continued									
ES2409111-004	TCNT - SW4	EP030: Biochemical Oxygen Demand	----	2	mg/L	6	10	46.4	No Limit



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.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EA005P: pH by PC Titrator (QCLot: 5685627)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98.8	101
				----	7 pH Unit	99.7	99.2	101
EA010P: Conductivity by PC Titrator (QCLot: 5685626)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	97.4	89.9	110
				<1	2100 µS/cm	101	90.2	111
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5687182)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	102	83.0	129
				<5	1000 mg/L	91.2	82.0	110
				<5	928 mg/L	97.1	83.0	118
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5683722)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	104	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5683726)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	96.2	69.0	123
				<0.1	1 mg/L	99.2	70.0	123
				<0.1	5 mg/L	96.3	70.0	123
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5683725)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	96.7	71.3	126
				<0.01	0.442 mg/L	95.0	71.3	126
				<0.01	1 mg/L	104	70.0	130
EP030: Biochemical Oxygen Demand (BOD) (QCLot: 5679591)								
EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	200 mg/L	98.3	74.0	112

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 Concentration	Spike Recovery (%) MS	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number			Low	High
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5683722)							
ES2408892-013	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	118	70.0	130



Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
				Concentration	MS	Low	High
Laboratory sample ID	Sample ID	Method: Compound	CAS Number				
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLOT: 5683726)							
ES2409045-004	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	125	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLOT: 5683725)							
ES2409045-004	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	99.2	70.0	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2409111	Page	: 1 of 5
Client	: TOP CROC NT	Laboratory	: Environmental Division Sydney
Contact	: Wayne Kinbacher	Telephone	: +61-2-8784 8555
Project	: TOP CROC NT CROCODILE FARM - SURFACEWATER	Date Samples Received	: 21-Mar-2024
Site	: ----	Issue Date	: 04-Apr-2024
Sampler	: Wayne Kinbacher	No. of samples received	: 4
Order number	: ----	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural						
TCNT - SW1, TCNT - SW2,		----	----	----	25-Mar-2024	20-Mar-2024
TCNT - SW3, TCNT - SW4						5

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P) TCNT - SW1, TCNT - SW3,	TCNT - SW2, TCNT - SW4	20-Mar-2024	----	----	----	25-Mar-2024	20-Mar-2024	✖
EA010P: Conductivity by PC Titrator								
Clear Plastic Bottle - Natural (EA010-P) TCNT - SW1, TCNT - SW3,	TCNT - SW2, TCNT - SW4	20-Mar-2024	----	----	----	25-Mar-2024	17-Apr-2024	✔
EA025: Total Suspended Solids dried at 104 ± 2°C								
Clear Plastic Bottle - Natural (EA025H) TCNT - SW1, TCNT - SW3,	TCNT - SW2, TCNT - SW4	20-Mar-2024	----	----	----	26-Mar-2024	27-Mar-2024	✔
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) TCNT - SW1, TCNT - SW3,	TCNT - SW2, TCNT - SW4	20-Mar-2024	----	----	----	25-Mar-2024	17-Apr-2024	✔
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK061G) TCNT - SW1, TCNT - SW3,	TCNT - SW2, TCNT - SW4	20-Mar-2024	25-Mar-2024	17-Apr-2024	✔	25-Mar-2024	17-Apr-2024	✔



Matrix: WATER		Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.						
Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EK067G: Total Phosphorus as P by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK067G)		20-Mar-2024	25-Mar-2024	17-Apr-2024	✔	25-Mar-2024	17-Apr-2024	✔
TCNT - SW1,	TCNT - SW2,							
TCNT - SW3,	TCNT - SW4							
EP030: Biochemical Oxygen Demand (BOD)								
Clear Plastic Bottle - Natural (EP030)		20-Mar-2024	----	----	----	22-Mar-2024	22-Mar-2024	✔
TCNT - SW1,	TCNT - SW2,							
TCNT - SW3,	TCNT - SW4							
MW006: Thermotolerant Coliforms & E.coli by MF								
Sterile Plastic Bottle - Sodium Thiosulfate (MW006)		20-Mar-2024	----	----	----	21-Mar-2024	21-Mar-2024	✔
TCNT - SW1,	TCNT - SW2,							
TCNT - SW3,	TCNT - SW4							
MW007: Coliforms by MF								
Sterile Plastic Bottle - Sodium Thiosulfate (MW007)		20-Mar-2024	----	----	----	21-Mar-2024	21-Mar-2024	✔
TCNT - SW1,	TCNT - SW2,							
TCNT - SW3,	TCNT - SW4							
MW023: Enterococci by Membrane Filtration								
Sterile Plastic Bottle - Sodium Thiosulfate (MW023)		20-Mar-2024	----	----	----	21-Mar-2024	21-Mar-2024	✔
TCNT - SW1,	TCNT - SW2,							
TCNT - SW3,	TCNT - SW4							



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Biochemical Oxygen Demand (BOD)	EP030	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	3	28	10.71	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	38	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Biochemical Oxygen Demand (BOD)	EP030	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	3	28	10.71	8.33	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	38	13.16	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	19	15.79	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	18	16.67	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Biochemical Oxygen Demand (BOD)	EP030	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of 'non-filterable' residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Biochemical Oxygen Demand (BOD)	EP030	WATER	In house: Referenced to APHA 5210 B. The 5-Day BOD test provides an empirical measure of the oxygen consumption capacity of a given water. A portion of the sample is diluted into oxygenated, nutrient rich water, and a seed added to begin biological decay. The initial dissolved oxygen content is measured, then the bottle is sealed and incubated for five days. The remaining dissolved oxygen is measured, and from the difference, the demand for oxygen, by biological decay, is determined. This method is compliant with NEPM Schedule B(3).
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	AS 4276.7
Coliforms by Membrane Filtration	MW007	WATER	AS 4276.5
Enumeration of Enterococci by Membrane Filtration	MW023	WATER	AS4276.9
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)



CERTIFICATE OF ANALYSIS

Work Order	: ES2409112	Page	: 1 of 3
Client	: TOP CROC NT	Laboratory	: Environmental Division Sydney
Contact	: Wayne Kinbacher	Contact	: Customer Services ES
Address	: 1350 Old Bynoe Rd, Berry Springs NT 0838	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: TOP CROC NT CROCODILE FARM - WASTEWATER	Date Samples Received	: 21-Mar-2024 16:30
Order number	: ----	Date Analysis Commenced	: 21-Mar-2024
C-O-C number	: ----	Issue Date	: 04-Apr-2024 12:00
Sampler	: Wayne Kinbacher		
Site	: ----		
Quote number	: ----		
No. of samples received	: 2		
No. of samples analysed	: 2		



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, 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
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Sarah Griffiths	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 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.

- 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.
- MW006 is ALS's internal code and is equivalent to AS4276.5.
- Microbiological Comment: ES2409112 – 01 results for MW007 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.
- MW023 is ALS's internal code and is equivalent to AS4276.9.
- MW007 is ALS's internal code and is equivalent to AS4276.5.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	TCNT - IN	TCNT - OUT	----	----	----
Sampling date / time					20-Mar-2024 08:00	20-Mar-2024 08:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2409112-001	ES2409112-002	-----	-----	-----
					Result	Result	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		8.60	9.15	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		77	74	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		32	36	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.23	0.24	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		1.1	2.6	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
[^] Total Nitrogen as N	----	0.1	mg/L		1.3	2.8	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.26	0.34	----	----	----
EP030: Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	----	2	mg/L		16	10	----	----	----
MW006: Thermotolerant Coliforms & E.coli by MF									
Escherichia coli	----	1	CFU/100mL		<1	<1	----	----	----
MW007: Coliforms by MF									
Coliforms	----	1	CFU/100mL		~8600	10000	----	----	----
MW023: Enterococci by Membrane Filtration									
Enterococci	----	1	CFU/100mL		12	~2	----	----	----



QUALITY CONTROL REPORT

Work Order	: ES2409112	Page	: 1 of 5
Client	: TOP CROC NT	Laboratory	: Environmental Division Sydney
Contact	: Wayne Kinbacher	Contact	: Customer Services ES
Address	: 1350 Old Bynoe Rd, Berry Springs NT 0838	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: TOP CROC NT CROCODILE FARM - WASTEWATER	Date Samples Received	: 21-Mar-2024
Order number	: ----	Date Analysis Commenced	: 21-Mar-2024
C-O-C number	: ----	Issue Date	: 04-Apr-2024
Sampler	: Wayne Kinbacher		
Site	: ----		
Quote number	: ----		
No. of samples received	: 2		
No. of samples analysed	: 2		



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
Sarah Griffiths	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.

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 Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA005P: pH by PC Titrator (QC Lot: 5685627)									
ES2409111-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	5.96	5.88	1.4	0% - 20%
ES2409125-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	4.82	4.65	3.6	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 5685626)									
ES2409111-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	14	13	9.2	0% - 50%
ES2409439-003	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	10500	10500	0.0	0% - 20%
ES2409125-004	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	32	34	4.3	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5687182)									
ES2409033-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	20	17	14.8	No Limit
ES2409111-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	5	0.0	No Limit
ES2409400-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	346	338	2.3	0% - 20%
ES2409729-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	5	5	0.0	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5683722)									
ES2408892-013	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.60	0.60	0.0	0% - 20%
ES2409125-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.01	0.0	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5683726)									
ES2409045-003	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.2	0.0	No Limit
ES2409045-010	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	0.1	0.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5683725)									
ES2409045-003	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	0.01	0.0	No Limit
ES2409045-010	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5683727)									
ES2409113-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.03	0.04	0.0	No Limit



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 (%)
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5683727) - continued									
ES2409126-004	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EP030: Biochemical Oxygen Demand (BOD) (QC Lot: 5679591)									
ES2409046-001	Anonymous	EP030: Biochemical Oxygen Demand	----	2	mg/L	6	12	61.0	No Limit
ES2409111-004	Anonymous	EP030: Biochemical Oxygen Demand	----	2	mg/L	6	10	46.4	No Limit



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.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EA005P: pH by PC Titrator (QCLot: 5685627)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	100	98.8	101
				----	7 pH Unit	99.7	99.2	101
EA010P: Conductivity by PC Titrator (QCLot: 5685626)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	97.4	89.9	110
				<1	2100 µS/cm	101	90.2	111
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5687182)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	102	83.0	129
				<5	1000 mg/L	91.2	82.0	110
				<5	928 mg/L	97.1	83.0	118
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5683722)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	104	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5683726)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	96.2	69.0	123
				<0.1	1 mg/L	99.2	70.0	123
				<0.1	5 mg/L	96.3	70.0	123
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5683725)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	96.7	71.3	126
				<0.01	0.442 mg/L	95.0	71.3	126
				<0.01	1 mg/L	104	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5683727)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	98.3	71.3	126
				<0.01	0.442 mg/L	96.4	71.3	126
				<0.01	1 mg/L	106	70.0	130
EP030: Biochemical Oxygen Demand (BOD) (QCLot: 5679591)								
EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	200 mg/L	98.3	74.0	112

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	Spike Recovery(%)	Acceptable Limits (%)



Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
				Concentration	MS	Low	High
Laboratory sample ID	Sample ID	Method: Compound	CAS Number				
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5683722)							
ES2408892-013	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	118	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5683726)							
ES2409045-004	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	125	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5683725)							
ES2409045-004	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	99.2	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5683727)							
ES2409125-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	104	70.0	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2409112	Page	: 1 of 5
Client	: TOP CROC NT	Laboratory	: Environmental Division Sydney
Contact	: Wayne Kinbacher	Telephone	: +61-2-8784 8555
Project	: TOP CROC NT CROCODILE FARM - WASTEWATER	Date Samples Received	: 21-Mar-2024
Site	: ----	Issue Date	: 04-Apr-2024
Sampler	: Wayne Kinbacher	No. of samples received	: 2
Order number	: ----	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural	TCNT - IN, TCNT - OUT	----	----	----	25-Mar-2024	20-Mar-2024
						5

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) TCNT - IN, TCNT - OUT	20-Mar-2024	----	----	----	25-Mar-2024	20-Mar-2024	✖
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P) TCNT - IN, TCNT - OUT	20-Mar-2024	----	----	----	25-Mar-2024	17-Apr-2024	✔
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) TCNT - IN, TCNT - OUT	20-Mar-2024	----	----	----	26-Mar-2024	27-Mar-2024	✔
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) TCNT - IN, TCNT - OUT	20-Mar-2024	----	----	----	25-Mar-2024	17-Apr-2024	✔
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) TCNT - IN, TCNT - OUT	20-Mar-2024	25-Mar-2024	17-Apr-2024	✔	25-Mar-2024	17-Apr-2024	✔
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) TCNT - IN, TCNT - OUT	20-Mar-2024	25-Mar-2024	17-Apr-2024	✔	25-Mar-2024	17-Apr-2024	✔
EP030: Biochemical Oxygen Demand (BOD)							
Clear Plastic Bottle - Natural (EP030) TCNT - IN, TCNT - OUT	20-Mar-2024	----	----	----	22-Mar-2024	22-Mar-2024	✔



Matrix: WATER

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
MW006: Thermotolerant Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) TCNT - IN, TCNT - OUT	20-Mar-2024	----	----	----	21-Mar-2024	21-Mar-2024	✔
MW007: Coliforms by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW007) TCNT - IN, TCNT - OUT	20-Mar-2024	----	----	----	21-Mar-2024	21-Mar-2024	✔
MW023: Enterococci by Membrane Filtration							
Sterile Plastic Bottle - Sodium Thiosulfate (MW023) TCNT - IN, TCNT - OUT	20-Mar-2024	----	----	----	21-Mar-2024	21-Mar-2024	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Biochemical Oxygen Demand (BOD)	EP030	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	3	28	10.71	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	38	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	4	33	12.12	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Biochemical Oxygen Demand (BOD)	EP030	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	3	28	10.71	8.33	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	38	13.16	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	19	15.79	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	6	33	18.18	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Biochemical Oxygen Demand (BOD)	EP030	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of 'non-filterable' residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Biochemical Oxygen Demand (BOD)	EP030	WATER	In house: Referenced to APHA 5210 B. The 5-Day BOD test provides an empirical measure of the oxygen consumption capacity of a given water. A portion of the sample is diluted into oxygenated, nutrient rich water, and a seed added to begin biological decay. The initial dissolved oxygen content is measured, then the bottle is sealed and incubated for five days. The remaining dissolved oxygen is measured, and from the difference, the demand for oxygen, by biological decay, is determined. This method is compliant with NEPM Schedule B(3).
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	AS 4276.7
Coliforms by Membrane Filtration	MW007	WATER	AS 4276.5
Enumeration of Enterococci by Membrane Filtration	MW023	WATER	AS4276.9
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)



CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADELAIDE 3/1 Burma Road Poonake SA 5095
Ph: 08 8162 5130 E: Adelaide@alsglobal.com

BRISBANE 2 Byth Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

GLADSTONE 48 Callamondah Drive Gladstone QLD 4680
Ph: 07 4978 7944 E: ALS@viva.Gladstone@alsglobal.com

MACKAY Unit 2/20 Caterpillar Drive Pajet QLD 4740
Ph: 07 4952 6795 E: ALS@viva.Mackay@alsglobal.com

MELBOURNE 2/4 Westall Road Springvale VIC 3171
Ph: 05 8549 9500 E: samples.melbourne@alsglobal.com

MURDOOH 1/29 Sydney Road Mudgee NSW 2850
Ph: 02 6372 6735 E: mudgee.m@alsglobal.com

NEWCASTLE 6/686 Maitland Road Mayfield West NSW 2304
Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

NOARAH 4/13 Cleary Place North Nowra NSW 2541
Ph: 02 4425 2053 E: nowra@alsglobal.com

PERTH 26 Rigall Way Wangara WA 8005
Ph: 08 9408 1301 E: samples.perth@alsglobal.com

SYDNEY 277-289 Woodpark Road Smithfield NSW 2184
Ph: 02 9784 8555 E: samples.sydney@alsglobal.com

TOWNSVILLE 15 Carlton Street Kirwan QLD 4817
Ph: 07 4773 0090 E: ALS@viva.Townsville@alsglobal.com

WOLLONGONG 1/19-21 Ralph Black Drive Nth Wollongong NSW 2500
Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: TOP CROC - TCNT

OFFICE: 1350 OLD BYNOE RD BERRY SPRINGS NT 0838

PROJECT: TOP CROC NT CROCODILE FARM - WASTEWATER PROJECT NO.:

ORDER NUMBER:

PURCHASE ORDER NO.:

PROJECT MANAGER: WAYNE KINBACHER

CONTACT PH: 0428886818

SAMPLER: WAYNE

SAMPLER MOBILE: 0428886818

COC Emailed to ALS? (YES / NO)

EDD FORMAT (or default):

Email Reports to (will default to PM if no other addresses are listed): toporganicent@gmail.com

Email Invoice to (will default to PM if no other addresses are listed): toporganicent@gmail.com

TURNAROUND REQUIREMENTS :

(Standard TAT may be longer for some tests
e.g., Ultra Trace Organics)

ALS QUOTE NO.:

COUNTRY OF ORIGIN:

☐ Standard TAT (List due date):

☐ Non Standard or urgent TAT (List due date):

COC SEQUENCE NUMBER (Circle)

COC: 1 2 3 4 5 6 7

OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?

Yes

No

N/A

Free ice / frozen ice bricks present upon receipt?

Yes

No

N/A

Random Sample Temperature on Receipt:

°C

Other comment:

RELINQUISHED BY:

Charmaine Carter

DATE/TIME:

20.3.24 1.18pm

RECEIVED BY:

1:18

DATE/TIME:

20/3/24

RELINQUISHED BY:

RECEIVED BY:

Jonathan

DATE/TIME:

21/3/24 16:30

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)		CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	E.coli, Enterococci, Total Coliforms	TN, TP	PH, EC	BOD, TSS					Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.	
1	TCNT - IN	20.3.24/8am	W		4	X	X	X	X						
2	TCNT - OUT	11 11	W		4	X	X	X	X					LAB OF ORIGIN: DARWIN Environmental Division Sydney Work Order Reference ES2409112 Telephone : + 61-2-8784 8555	
TOTAL															

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.



CERTIFICATE OF ANALYSIS

Work Order	: ES2419137	Page	: 1 of 3
Client	: TOP CROC NT	Laboratory	: Environmental Division Sydney
Contact	: TOP ORGANICENT	Contact	: Customer Services ES
Address	: 1350 Old Bynoe Rd, Berry Springs NT 0838	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: TOP CROC NT CROCODILE FARM - GROUND WATER	Date Samples Received	: 13-Jun-2024 08:30
Order number	: ----	Date Analysis Commenced	: 13-Jun-2024
C-O-C number	: ----	Issue Date	: 17-Jul-2024 12:17
Sampler	: Wayne Kinbacher		
Site	: ----		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		



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, 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
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Sarah Griffiths	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 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.

- 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.
- MW006 is ALS's internal code and is equivalent to AS4276.5.
- MW023 is ALS's internal code and is equivalent to AS4276.9.
- MW007 is ALS's internal code and is equivalent to AS4276.5.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	TCNT - GW	----	----	----	----
Sampling date / time					12-Jun-2024 08:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2419137-001	-----	-----	-----	-----
				Result		----	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		7.72	----	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		371	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.4	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.4	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.12	----	----	----	----
MW006: Thermotolerant Coliforms & E.coli by MF									
Escherichia coli	----	1	CFU/100mL		<1	----	----	----	----
MW007: Coliforms by MF									
Coliforms	----	1	CFU/100mL		~6	----	----	----	----
MW023: Enterococci by Membrane Filtration									
Enterococci	----	1	CFU/100mL		<1	----	----	----	----



QUALITY CONTROL REPORT

Work Order	: ES2419137	Page	: 1 of 3
Client	: TOP CROC NT	Laboratory	: Environmental Division Sydney
Contact	: TOP ORGANICENT	Contact	: Customer Services ES
Address	: 1350 Old Bynoe Rd, Berry Springs NT 0838	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: TOP CROC NT CROCODILE FARM - GROUND WATER	Date Samples Received	: 13-Jun-2024
Order number	: ----	Date Analysis Commenced	: 13-Jun-2024
C-O-C number	: ----	Issue Date	: 17-Jul-2024
Sampler	: Wayne Kinbacher		
Site	: ----		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		



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, 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
Sarah Griffiths	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.

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

* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

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 Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA005P: pH by PC Titrator (QC Lot: 5860514)									
ES2419478-005	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	12.0	12.0	0.0	0% - 20%
ES2419137-001	TCNT - GW	EA005-P: pH Value	----	0.01	pH Unit	7.72	7.97	3.2	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 5860513)									
ES2419137-001	TCNT - GW	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	371	371	0.0	0% - 20%
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5865606)									
ES2419141-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.05	0.06	0.0	No Limit
ES2419130-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.03	0.04	43.9	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5865602)									
ES2419130-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (1.0)*	mg/L	30.4	29.7	2.1	0% - 20%
ES2419154-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	39.2	38.6	1.6	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5865601)									
ES2419130-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (1.00)*	mg/L	<1.00	<1.00	0.0	No Limit
ES2419154-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	2.64	2.62	0.6	0% - 20%



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.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EA005P: pH by PC Titrator (QCLot: 5860514)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	101	98.8	101
				----	7 pH Unit	100	99.2	101
EA010P: Conductivity by PC Titrator (QCLot: 5860513)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	102	89.9	110
				<1	2100 µS/cm	97.8	90.2	111
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5865606)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	104	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5865602)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	96.1	69.0	123
				<0.1	1 mg/L	115	70.0	123
				<0.1	5 mg/L	98.6	70.0	123
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5865601)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	96.9	71.3	126
				<0.01	0.442 mg/L	110	71.3	126
				<0.01	1 mg/L	101	70.0	130

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 Concentration	SpikeRecovery(%) MS	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number			Low	High
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5865606)							
ES2419130-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	102	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5865602)							
ES2419137-001	TCNT - GW	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	98.5	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5865601)							
ES2419137-001	TCNT - GW	EK067G: Total Phosphorus as P	----	1 mg/L	91.6	70.0	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2419137	Page	: 1 of 5
Client	: TOP CROC NT	Laboratory	: Environmental Division Sydney
Contact	: TOP ORGANICENT	Telephone	: +61-2-8784 8555
Project	: TOP CROC NT CROCODILE FARM - GROUND WATER	Date Samples Received	: 13-Jun-2024
Site	: ----	Issue Date	: 17-Jul-2024
Sampler	: Wayne Kinbacher	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, where applicable to the methodology, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural TCNT - GW	----	----	----	16-Jun-2024	12-Jun-2024	4

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) TCNT - GW	12-Jun-2024	----	----	----	16-Jun-2024	12-Jun-2024	✖
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P) TCNT - GW	12-Jun-2024	----	----	----	16-Jun-2024	10-Jul-2024	✔
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) TCNT - GW	12-Jun-2024	----	----	----	19-Jun-2024	10-Jul-2024	✔
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) TCNT - GW	12-Jun-2024	18-Jun-2024	10-Jul-2024	✔	18-Jun-2024	10-Jul-2024	✔
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) TCNT - GW	12-Jun-2024	18-Jun-2024	10-Jul-2024	✔	18-Jun-2024	10-Jul-2024	✔
MW006: Thermotolerant Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) TCNT - GW	12-Jun-2024	----	----	----	13-Jun-2024	13-Jun-2024	✔
MW007: Coliforms by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW007) TCNT - GW	12-Jun-2024	----	----	----	13-Jun-2024	13-Jun-2024	✔



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
MW023: Enterococci by Membrane Filtration							
Sterile Plastic Bottle - Sodium Thiosulfate (MW023) TCNT - GW	12-Jun-2024	----	----	----	13-Jun-2024	13-Jun-2024	✔



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Conductivity by Auto Titrator	EA010-P	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Conductivity by Auto Titrator	EA010-P	2	8	25.00	8.33	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Conductivity by Auto Titrator	EA010-P	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	AS 4276.7
Coliforms by Membrane Filtration	MW007	WATER	AS 4276.5
Enumeration of Enterococci by Membrane Filtration	MW023	WATER	AS4276.9
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)



Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lucoils Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.



CERTIFICATE OF ANALYSIS

Work Order	: ES2419138	Page	: 1 of 3
Client	: TOP CROC NT	Laboratory	: Environmental Division Sydney
Contact	: TOP ORGANICENT	Contact	: Customer Services ES
Address	: 1350 Old Bynoe Rd, Berry Springs NT 0838	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: TOP CROC NT CROCODILE FARM - WASTEWATER	Date Samples Received	: 13-Jun-2024 08:30
Order number	: ----	Date Analysis Commenced	: 13-Jun-2024
C-O-C number	: ----	Issue Date	: 17-Jul-2024 12:20
Sampler	: Wayne Kinbacher		
Site	: ----		
Quote number	: ----		
No. of samples received	: 2		
No. of samples analysed	: 2		



Accreditation No. 825
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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.

Signatories	Position	Accreditation Category
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Sarah Griffiths	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 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.

- 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.
- MW006 is ALS's internal code and is equivalent to AS4276.5.
- Microbiological Comment: Membrane filtration results for MW006 are reported as estimate (~) due to the growth of bacteria on the filter membrane being counted <10 cfu and/or >100 cfu and 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.
- MW023 is ALS's internal code and is equivalent to AS4276.9.
- MW007 is ALS's internal code and is equivalent to AS4276.5.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	TCNT - IN	TCNT - OUT	----	----	----
Sampling date / time					12-Jun-2024 08:00	12-Jun-2024 08:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2419138-001	ES2419138-002	-----	-----	-----
					Result	Result	----	----	----
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		8.58	8.61	----	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		278	280	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		24	19	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	<0.01	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		2.4	2.5	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
[^] Total Nitrogen as N	----	0.1	mg/L		2.4	2.5	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.60	0.56	----	----	----
EP030: Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	----	2	mg/L		7	4	----	----	----
MW006: Thermotolerant Coliforms & E.coli by MF									
Escherichia coli	----	1	CFU/100mL		~50	~60	----	----	----
MW007: Coliforms by MF									
Coliforms	----	1	CFU/100mL		81000	86000	----	----	----
MW023: Enterococci by Membrane Filtration									
Enterococci	----	1	CFU/100mL		~70	~82	----	----	----



QUALITY CONTROL REPORT

Work Order	: ES2419138	Page	: 1 of 5
Client	: TOP CROC NT	Laboratory	: Environmental Division Sydney
Contact	: TOP ORGANICENT	Contact	: Customer Services ES
Address	: 1350 Old Bynoe Rd, Berry Springs NT 0838	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: TOP CROC NT CROCODILE FARM - WASTEWATER	Date Samples Received	: 13-Jun-2024
Order number	: ----	Date Analysis Commenced	: 13-Jun-2024
C-O-C number	: ----	Issue Date	: 17-Jul-2024
Sampler	: Wayne Kinbacher		
Site	: ----		
Quote number	: ----		
No. of samples received	: 2		
No. of samples analysed	: 2		



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ISO/IEC 17025 - 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
Sarah Griffiths	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.

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

* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

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 Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA005P: pH by PC Titrator (QC Lot: 5860514)									
ES2419478-005	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	12.0	12.0	0.0	0% - 20%
ES2419137-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.72	7.97	3.2	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 5860513)									
ES2419137-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	371	371	0.0	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 5865256)									
ES2419138-001	TCNT - IN	EA025H: Suspended Solids (SS)	----	5	mg/L	24	23	5.3	No Limit
ES2419198-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	6	22.2	No Limit
ES2419386-002	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	21	24	12.3	No Limit
EW2402708-006	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	53	54	2.8	0% - 50%
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 5865606)									
ES2419141-002	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.05	0.06	0.0	No Limit
ES2419130-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.03	0.04	43.9	No Limit
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 5865602)									
ES2419130-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1 (1.0)*	mg/L	30.4	29.7	2.1	0% - 20%
ES2419154-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	39.2	38.6	1.6	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 5865601)									
ES2419130-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01 (1.00)*	mg/L	<1.00	<1.00	0.0	No Limit
ES2419154-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	2.64	2.62	0.6	0% - 20%
EP030: Biochemical Oxygen Demand (BOD) (QC Lot: 5856744)									
ES2419138-001	TCNT - IN	EP030: Biochemical Oxygen Demand	----	2	mg/L	7	10	35.3	No Limit

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Work Order : ES2419138
Client : TOP CROC NT
Project : TOP CROC NT CROCODILE FARM - WASTEWATER



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 (%)
EP030: Biochemical Oxygen Demand (BOD) (QC Lot: 5856744) - continued									
ES2419209-007	Anonymous	EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	<2	0.0	No Limit



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.

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EA005P: pH by PC Titrator (QCLot: 5860514)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	101	98.8	101
				----	7 pH Unit	100	99.2	101
EA010P: Conductivity by PC Titrator (QCLot: 5860513)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	220 µS/cm	102	89.9	110
				<1	2100 µS/cm	97.8	90.2	111
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 5865256)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	98.3	83.0	129
				<5	1000 mg/L	94.6	82.0	110
				<5	928 mg/L	94.4	83.0	118
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5865606)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	104	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5865602)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	96.1	69.0	123
				<0.1	1 mg/L	115	70.0	123
				<0.1	5 mg/L	98.6	70.0	123
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5865601)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	96.9	71.3	126
				<0.01	0.442 mg/L	110	71.3	126
				<0.01	1 mg/L	101	70.0	130
EP030: Biochemical Oxygen Demand (BOD) (QCLot: 5856744)								
EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	200 mg/L	92.5	74.0	112

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 Concentration	Spike Recovery (%) MS	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number			Low	High
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 5865606)							
ES2419130-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	102	70.0	130



Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
				Concentration	MS	Low	High
Laboratory sample ID	Sample ID	Method: Compound	CAS Number				
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 5865602)							
ES2419137-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	98.5	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 5865601)							
ES2419137-001	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	91.6	70.0	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2419138	Page	: 1 of 5
Client	: TOP CROC NT	Laboratory	: Environmental Division Sydney
Contact	: TOP ORGANICENT	Telephone	: +61-2-8784 8555
Project	: TOP CROC NT CROCODILE FARM - WASTEWATER	Date Samples Received	: 13-Jun-2024
Site	: ----	Issue Date	: 17-Jul-2024
Sampler	: Wayne Kinbacher	No. of samples received	: 2
Order number	: ----	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, where applicable to the methodology, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural	TCNT - IN, TCNT - OUT	----	----	----	16-Jun-2024	12-Jun-2024
						4

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) TCNT - IN, TCNT - OUT	12-Jun-2024	----	----	----	16-Jun-2024	12-Jun-2024	✖
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P) TCNT - IN, TCNT - OUT	12-Jun-2024	----	----	----	16-Jun-2024	10-Jul-2024	✔
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H) TCNT - IN, TCNT - OUT	12-Jun-2024	----	----	----	18-Jun-2024	19-Jun-2024	✔
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) TCNT - IN, TCNT - OUT	12-Jun-2024	----	----	----	19-Jun-2024	10-Jul-2024	✔
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G) TCNT - IN, TCNT - OUT	12-Jun-2024	18-Jun-2024	10-Jul-2024	✔	18-Jun-2024	10-Jul-2024	✔
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G) TCNT - IN, TCNT - OUT	12-Jun-2024	18-Jun-2024	10-Jul-2024	✔	18-Jun-2024	10-Jul-2024	✔
EP030: Biochemical Oxygen Demand (BOD)							
Clear Plastic Bottle - Natural (EP030) TCNT - IN, TCNT - OUT	12-Jun-2024	----	----	----	14-Jun-2024	14-Jun-2024	✔

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
MW006: Thermotolerant Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006) TCNT - IN, TCNT - OUT	12-Jun-2024	----	----	----	13-Jun-2024	13-Jun-2024	✓
MW007: Coliforms by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW007) TCNT - IN, TCNT - OUT	12-Jun-2024	----	----	----	13-Jun-2024	13-Jun-2024	✓
MW023: Enterococci by Membrane Filtration							
Sterile Plastic Bottle - Sodium Thiosulfate (MW023) TCNT - IN, TCNT - OUT	12-Jun-2024	----	----	----	13-Jun-2024	13-Jun-2024	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Biochemical Oxygen Demand (BOD)	EP030	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Biochemical Oxygen Demand (BOD)	EP030	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	2	8	25.00	8.33	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by Auto Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	40	12.50	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Biochemical Oxygen Demand (BOD)	EP030	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by Auto Titrator	EA010-P	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by Auto Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM Schedule B(3)
Conductivity by Auto Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of 'non-filterable' residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Biochemical Oxygen Demand (BOD)	EP030	WATER	In house: Referenced to APHA 5210 B. The 5-Day BOD test provides an empirical measure of the oxygen consumption capacity of a given water. A portion of the sample is diluted into oxygenated, nutrient rich water, and a seed added to begin biological decay. The initial dissolved oxygen content is measured, then the bottle is sealed and incubated for five days. The remaining dissolved oxygen is measured, and from the difference, the demand for oxygen, by biological decay, is determined. This method is compliant with NEPM Schedule B(3).
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	AS 4276.7
Coliforms by Membrane Filtration	MW007	WATER	AS 4276.5
Enumeration of Enterococci by Membrane Filtration	MW023	WATER	AS4276.9
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)



CHAIN OF CUSTODY

ALS Laboratory: please tick →

LABORATORY 1: 311 Burns Road, Pootah SA 5095
Ph: 08 816 5130 E: alslab1@alsglobal.com

LABORATORY 2: 2111 Street, Stirling QLD 4055
Ph: 07 3243 7222 E: samples.stirling@alsglobal.com

LABORATORY 3: 48 Callender Rd, Gladstone QLD 4680
Ph: 07 4913 7944 E: alslab3@alsglobal.com

LABORATORY 4: 2111 Street, Stirling QLD 4055
Ph: 07 4913 7944 E: alslab4@alsglobal.com

LABORATORY 5: 2111 Street, Stirling QLD 4055
Ph: 07 4913 7944 E: alslab5@alsglobal.com

LABORATORY 6: 2111 Street, Stirling QLD 4055
Ph: 07 4913 7944 E: alslab6@alsglobal.com

LABORATORY 7: 2111 Street, Stirling QLD 4055
Ph: 07 4913 7944 E: alslab7@alsglobal.com

LABORATORY 8: 2111 Street, Stirling QLD 4055
Ph: 07 4913 7944 E: alslab8@alsglobal.com

LABORATORY 9: 2111 Street, Stirling QLD 4055
Ph: 07 4913 7944 E: alslab9@alsglobal.com

LABORATORY 10: 2111 Street, Stirling QLD 4055
Ph: 07 4913 7944 E: alslab10@alsglobal.com

LABORATORY 11: 2111 Street, Stirling QLD 4055
Ph: 07 4913 7944 E: alslab11@alsglobal.com

LABORATORY 12: 2111 Street, Stirling QLD 4055
Ph: 07 4913 7944 E: alslab12@alsglobal.com

CLIENT: TOP CROC - TCNT		TURNAROUND REQUIREMENTS: ☐ Standard TAT (List due date): (Standard TAT may be longer for some tests e.g., Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
OFFICE: 1350 OLD BYNOE RD BERRY SPRINGS NT 0838		ALS QUOTE NO.:		Custody Seal Intact? Yes No N/A	
PROJECT: TOP CROC NT CROCODILE FARM - WASTEWATER PROJECT NO.:		COUNTRY OF ORIGIN:		Free ice / frozen ice bricks present upon receipt? Yes No N/A	
ORDER NUMBER:		PURCHASE ORDER NO.:		Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: WAYNE KINBACHER		CONTACT PH: 0428886818		Other comment:	
SAMPLER: WAYNE		SAMPLER MOBILE: 0428886818		RELINQUISHED BY:	
COC Emailed to ALS? (YES / NO)		EDD FORMAT (or default):		RECEIVED BY:	
Email Reports to (will default to PM if no other addresses are listed): toporjanicent@gmail.com		DATE/TIME: 12-6-24 12:14pm 12/6 12:17		DATE/TIME: 13/6/24 0830	
Email Invoice to (will default to PM if no other addresses are listed): toporjanicent@gmail.com					

ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)		CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	E.coli, Enterococci, Total Coliforms	TN, TP	PH, EC	BIOTESTS					Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.	
1	TCNT - IN	12-6-24 8am	W		4	X	X	X	X						
2	TCNT - OUT	11 11	W		4	X	X	X	X					LAB OF ORIGIN: DARWIN	
TOTAL															

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.