



Certificate of Analysis

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Client:	Oceania Dairy Limited	Lab No:	2299502	SPV1
Contact:	Shane Lodge C/- Oceania Dairy Limited PO Box 891 Timaru 7940	Date Received:	31-Dec-2019	
		Date Reported:	08-Jan-2020	
		Quote No:	77729	
		Order No:		
		Client Reference:	Treated DAF Waste Water - condition 21	
		Submitted By:	Joanne Baikie	

Sample Type: Aqueous

Sample Name:	Treated DAF Waste Water (cond 21) 30-Dec-2019 7:00 am				
Lab Number:	2299502.1				
pH	pH Units	7.5	-	-	-
Electrical Conductivity (EC)	mS/m	232	-	-	-
Total Suspended Solids	g/m ³	189	-	-	-
Total Solids (TS)	g/m ³	2,100	-	-	-
Total Calcium	g/m ³	250	-	-	-
Total Magnesium	g/m ³	7.6	-	-	-
Total Potassium	g/m ³	7.6	-	-	-
Total Sodium	g/m ³	290	-	-	-
Sodium Absorption Ratio (SAR)*	(mmol/L) ^{0.5}	5.0	-	-	-
Total Nitrogen	g/m ³	58	-	-	-
Total Ammoniacal-N	g/m ³	8.9	-	-	-
Nitrite-N	g/m ³	28	-	-	-
Nitrate-N	g/m ³	1.12	-	-	-
Nitrate-N + Nitrite-N	g/m ³	29	-	-	-
Total Kjeldahl Nitrogen (TKN)	g/m ³	29	-	-	-
Dissolved Reactive Phosphorus	g/m ³	2.5	-	-	-
Total Phosphorus	g/m ³	5.8	-	-	-
Sulphate	g/m ³	840	-	-	-
Total Biochemical Oxygen Demand (TBOD ₅)	g O ₂ /m ³	300	-	-	-
Chemical Oxygen Demand (COD)	g O ₂ /m ³	490	-	-	-

Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Aqueous

Test	Method Description	Default Detection Limit	Sample No
Filtration, Unpreserved	Sample filtration through 0.45µm membrane filter. Performed at Hill Laboratories - Chemistry; 101c Waterloo Road, Christchurch.	-	1
Total Digestion	Nitric acid digestion. APHA 3030 E (modified) 23 rd ed. 2017.	-	1
pH	pH meter. Analysed at Hill Laboratories - Chemistry; 101c Waterloo Road, Christchurch. APHA 4500-H ⁺ B 23 rd ed. 2017. Note: It is not possible to achieve the APHA Maximum Storage Recommendation for this test (15 min) when samples are analysed upon receipt at the laboratory, and not in the field. Samples and Standards are analysed at an equivalent laboratory temperature (typically 18 to 22 °C). Temperature compensation is used.	0.1 pH Units	1



Sample Type: Aqueous			
Test	Method Description	Default Detection Limit	Sample No
Electrical Conductivity (EC)	Conductivity meter, 25°C. Analysed at Hill Laboratories - Chemistry; 101c Waterloo Road, Christchurch. APHA 2510 B 23 rd ed. 2017.	0.1 mS/m	1
Total Suspended Solids	Filtration using Whatman 934 AH, Advantec GC-50 or equivalent filters (nominal pore size 1.2 - 1.5µm), gravimetric determination. Analysed at Hill Laboratories - Chemistry; 101c Waterloo Road, Christchurch. APHA 2540 D (modified) 23 rd ed. 2017.	3 g/m ³	1
Total Solids (TS)	Gravimetric. Analysed at Hill Laboratories - Chemistry; 101c Waterloo Road, Christchurch. APHA 2540 B (modified) 23 rd ed. 2017.	10 g/m ³	1
Total Calcium	Nitric acid digestion, ICP-MS, screen level. APHA 3125 B 23 rd ed. 2017.	1.1 g/m ³	1
Total Magnesium	Nitric acid digestion, ICP-MS, screen level. APHA 3125 B 23 rd ed. 2017.	0.42 g/m ³	1
Total Potassium	Nitric acid digestion, ICP-MS, screen level. APHA 3125 B 23 rd ed. 2017.	1.1 g/m ³	1
Total Sodium	Nitric acid digestion, ICP-MS, screen level. APHA 3125 B 23 rd ed. 2017.	0.42 g/m ³	1
Sodium Absorption Ratio (Total)*	Calculation; from sodium, calcium and magnesium, as follows; $(Na / 23) / [(Ca / 20 + Mg / 12.15)/2]^{0.5}$ where the concentrations for these ions (Na, Ca and Mg) are expressed as g/m ³ .	0.2 (mmol/L) ^{0.5}	1
Total Nitrogen	Calculation: TKN + Nitrate-N + Nitrite-N. Please note: The Default Detection Limit of 0.05 g/m ³ is only attainable when the TKN has been determined using a trace method utilising duplicate analyses. In cases where the Detection Limit for TKN is 0.10 g/m ³ , the Default Detection Limit for Total Nitrogen will be 0.11 g/m ³ .	0.05 g/m ³	1
Total Ammoniacal-N	Filtered Sample from Christchurch. Phenol/hypochlorite colourimetry. Flow injection analyser. (NH ₄ -N = NH ₄ ⁺ -N + NH ₃ -N). APHA 4500-NH ₃ H (modified) 23 rd ed. 2017.	0.010 g/m ³	1
Nitrite-N	Filtered sample from Christchurch. Automated Azo dye colorimetry, Flow injection analyser, screen level. APHA 4500-NO ₂ ⁻ I (modified) 23 rd ed. 2017.	0.10 g/m ³	1
Nitrate-N	Calculation: (Nitrate-N + Nitrite-N) - NO ₂ N. In-House.	0.0010 g/m ³	1
Nitrate-N + Nitrite-N	Filtered sample from Christchurch. Total oxidised nitrogen. Automated cadmium reduction, flow injection analyser, screen level. APHA 4500-NO ₃ ⁻ I (modified) 23 rd ed. 2017.	0.10 g/m ³	1
Total Kjeldahl Nitrogen (TKN)	Total Kjeldahl digestion, phenol/hypochlorite colorimetry. Discrete Analyser. APHA 4500-N _{org} D (modified) 4500 NH ₃ F (modified) 23 rd ed. 2017.	0.10 g/m ³	1
Dissolved Reactive Phosphorus	Filtered sample from Christchurch. Molybdenum blue colourimetry. Flow injection analyser. APHA 4500-P G (modified) 23 rd ed. 2017.	0.004 g/m ³	1
Total Phosphorus	Total phosphorus digestion, ascorbic acid colorimetry, Discrete Analyser, screen level. APHA 4500-P B & E (modified from manual analysis and also modified to include a reductant to reduce interference from any arsenic present in the sample) 23 rd ed. 2017. NWASCO, Water & soil Miscellaneous Publication No. 38, 1982.	0.2 g/m ³	1
Sulphate	Filtered sample from Christchurch. Ion Chromatography. APHA 4110 B (modified) 23 rd ed. 2017.	0.5 g/m ³	1
Total Biochemical Oxygen Demand (TBOD ₅)	Incubation 5 days, DO meter, no nitrification inhibitor added, seeded. Analysed at Hill Laboratories - Chemistry; 101c Waterloo Road, Christchurch. APHA 5210 B (modified) 23 rd ed. 2017.	2 g O ₂ /m ³	1
Chemical Oxygen Demand (COD), screen level	Dichromate/sulphuric acid digestion, colorimetry. Screen Level method. APHA 5220 D 23 rd ed. 2017.	25 g O ₂ /m ³	1

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Dates of testing are available on request. Please contact the laboratory for more information.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

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