

### Certificate of Analysis

#### Laboratory Reference:230301-006

<b>Attention:</b>	Lab Certificates	<b>Final Report:</b>	<b>499936-0</b>
<b>Client:</b>	<b>NORTHLAND REGIONAL COUNCIL</b>	<b>Report Issue Date:</b>	<b>10-Mar-2023</b>
<b>Address:</b>	<b>PO Box 9021, WHANGAREI, 148</b>	<b>Received Date:</b>	<b>02-Mar-2023</b>
<b>Client Reference:</b>	<b>SOE-Kerikeri Lakes - Waingaro</b>	<b>Laboratory Activity Dates:</b>	<b>02-Mar-2023 - 09-Mar-2023</b>
<b>Purchase Order:</b>	<b>0467601</b>	<b>Quote Reference :</b>	<b>976</b>

#### Sample Details

	WATERS	WATERS	WATERS
<b>Lab Sample ID:</b>	<b>230301-006-1</b>	<b>230301-006-2</b>	<b>230301-006-3</b>
<b>Client Sample ID:</b>	20231214	20231215	20231216
<b>Sample Date/Time</b>	01/03/2023 08:55	01/03/2023 08:50	01/03/2023 09:55
<b>Description:</b>	Lake Waingaro at Surface - intake/abstraction	Lake Waingaro at Bottom (18 m) at intake point	Lake Manuwei Weir at Onekura Road

#### Sample Parameters and Field Testing

<b>Laboratory Arrival Date</b>	02/03/2023	02/03/2023	02/03/2023
<b>Laboratory Arrival Temperature</b> °C	3.5	3.5	3.5
<b>Laboratory Arrival Time</b>	07:40 AM	07:40 AM	07:40 AM

#### General Testing

Ammoniacal Nitrogen (as N)	mg/L	0.008 ± 0.00054	0.462 ± 0.011	0.032 ± 0.0021
Chlorophyll A	mg/L	0.0036	-	<0.00072
Dissolved Reactive Phosphorus (as P)	mg/L	0.002 ± 0.00013	0.005 ± 0.00032	0.004 ± 0.00026
Total Kjeldahl Nitrogen (as N)	mg/L	0.333 ± 0.025	0.725 ± 0.054	0.266 ± 0.02
Total Nitrogen by Calc (as N)	mg/L	0.34	0.79	0.35
Total Oxidised Nitrogen (as N)	mg/L	0.0028	0.065	0.087
Total Phosphorus (as P)	mg/L	0.007 ± 0.00072	0.01 ± 0.001	0.015 ± 0.0015
Total Suspended Solids	mg/L	1.6 ± 0.18	2.6 ± 0.29	2.4 ± 0.27

#### Metals

##### Total Metals by ICP-MS—Trace (Default Digest)

Iron (Total)	mg/L	0.35 ± 0.072	7.2 ± 1.5	0.84 ± 0.17
Manganese (Total)	mg/L	0.011 ± 0.0019	0.5 ± 0.084	0.017 ± 0.003

#### Microbiology

##### Faecal coliforms by Membrane Filtration

Faecal coliforms	cfu/100 mL	23	-	270
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Results marked with \* are not accredited to International Accreditation New Zealand. A dash indicates no test performed.

Where samples have been supplied by the client, they are tested as received.

The results of analysis contained in this report relate only to the sample(s) tested. Where sample collection was performed by the laboratory, the results of analysis contained in this report relate only to the sample(s) collected.

#### Reference Methods

The sample(s) referred to in this report were analysed by the following method(s)

Analyte	Method Reference	MDL	Samples	Location
<b>Sample Parameters and Field Testing</b>				
Laboratory Arrival Date	APHA (online edition) 2550 B (temperature) or In-house methods (date and time)		All	Auckland
Laboratory Arrival Temperature	APHA (online edition) 2550 B (temperature) or In-house methods (date and time)		All	Auckland
Laboratory Arrival Time	APHA (online edition) 2550 B (temperature) or In-house methods (date and time)		All	Auckland
<b>General Testing</b>				
Ammoniacal Nitrogen (as N) by Colorimetry/Discrete Analyser	HMSO (1981) ISBN 0117516139	0.005 mg/L	All	Auckland



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General Testing					
Chlorophyll A by Aqueous Acetone Extraction and Spectrophotometry	APHA (online edition) 10200 H	0.0006 mg/L	1, 3	Auckland	
Dissolved Reactive Phosphorus (as P) by Colorimetry/Discrete Analyser	APHA (online edition) 4500-P F	0.002 mg/L	All	Auckland	
Total Kjeldahl Nitrogen (as N) by Sulphuric Acid Digestion (with mercury catalyst) and Colorimetry/Discrete Analyser	APHA (online edition) 4500-N org	0.1 mg/L	All	Auckland	
Total Nitrogen by Calc (as N)	Calculation		All	Auckland	
Total Oxidised Nitrogen (as N) by Automated Cadmium Reduction/Flow Analysis (0.45 µm Filtered)	APHA (online edition) 4500-NO3 I	0.002 mg/L	All	Auckland	
Total Phosphorus (as P) by Persulphate Digestion and Colorimetry/Discrete Analyser	APHA (online edition) 4500-P J (modified) (Discrete Analyser)	0.004 mg/L	All	Auckland	
Total Suspended Solids by Gravimetry	APHA (online edition) 2540 D / 2540 E	0.2 mg/L	All	Auckland	
Metals					
Total Metals by ICP-MS—Trace (Default Digest)					
Iron (Total)	APHA (online edition) 3125 B by ICPMS	0.002 mg/L	All	Auckland	
Manganese (Total)	APHA (online edition) 3125 B by ICPMS	0.0005 mg/L	All	Auckland	
Microbiology					
Faecal coliforms by Membrane Filtration					
Faecal coliforms	APHA (online edition) 9222 D	1 cfu/100 mL	1, 3	Auckland	
Preparations					
Digest for Total Metals in Liquids	APHA 3030E Modified ( 4:1 Nitric:Hydrochloric Acid: 95°C 2 hours)		All	Auckland	
Membrane Filtration (0.45 µm)	APHA (online edition) 4500-P B (preliminary filtration)		All	Auckland	
<i>The method detection limit (MDL) listed is the limit attainable in a relatively clean matrix. If dilutions are required for analysis the detection limit may be higher. For more information please contact the Compliance and Projects Manager.</i>					

Samples, with suitable preservation and stability of analytes, will be held by the laboratory for a period of two weeks after results have been reported, unless otherwise advised by the submitter.

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