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Certificate of Analysis

Client:	Timaru District Council	Lab No:	2804931	DWAPv2
Contact:	J Clemens	Date Received:	17-Dec-2021	
	C/- Timaru District Council	Date Reported:	05-Jan-2022	
	PO Box 522	Quote No:	30978	
	Timaru 7940	Order No:	38307	
		Client Reference:	Timaru Raw Water	
		Submitted By:	J Clemens	

Sample Type: Aqueous

	Sample Name:	Timaru Raw Water 17-Dec-2021 8:40 am	Guideline	Maximum Acceptable Values (MAV)
	Lab Number:	2804931.1	Value	
Routine Water Profile				
Turbidity	NTU	0.52	< 2.5	-
pН	pH Units	7.2	7.0 - 8.5	-
Total Alkalinity	g/m³ as CaCO3	44	-	-
Free Carbon Dioxide	g/m³ at 25°C	5.4	-	-
Total Hardness	g/m³ as CaCO3	38	< 200	-
Electrical Conductivity (EC)	mS/m	10.8	-	-
Electrical Conductivity (EC)	µS/cm	108	-	-
Approx Total Dissolved Salts	g/m³	73	< 1000	-
Total Arsenic	g/m³	< 0.0011	-	0.01
Total Boron	g/m³	0.0136	-	1.4
Total Calcium	g/m³	11.5	-	-
Total Copper	g/m³	0.0020	< 1	2
Total Iron	g/m³	< 0.021	< 0.2	-
Total Lead	g/m³	0.00017	-	0.01
Total Magnesium	g/m³	2.2	-	-
Total Manganese	g/m³	0.107	< 0.04 (Staining) < 0.10 (Taste)	0.4
Total Potassium	g/m³	1.29	-	-
Total Sodium	g/m³	6.9	< 200	-
Total Zinc	g/m³	< 0.0011	< 1.5	-
Chloride	g/m³	4.3	< 250	-
Nitrate-N	g/m³	0.28	-	11.3
Sulphate	g/m ³	2.8	< 250	-

Note: The Guideline Values and Maximum Acceptable Values (MAV) are taken from the publication 'Drinking-water Standards for New Zealand 2005 (Revised 2018)', Ministry of Health. Copies of this publication are available from https://www.health.govt.nz/publication/drinking-water-standards-new-zealand-2005-revised-2018

The Maximum Acceptable Values (MAVs) have been defined by the Ministry of Health for parameters of health significance and should not be exceeded. The Guideline Values are the limits for aesthetic determinands that, if exceeded, may render the water unattractive to consumers.

Note that the units g/m³ are the same as mg/L and ppm.

CREDITED



This Laboratory is accredited by International Accreditation New Zealand (IANZ), which represents New Zealand in the International Laboratory Accreditation Cooperation (ILAC). Through the ILAC Mutual Recognition Arrangement (ILAC-MRA) this accreditation is internationally recognised. The tests reported herein have been performed in accordance with the terms of accreditation, with the exception of tests marked * or any comments and interpretations, which are not accredited.

pH/Alkalinity and Corrosiveness Assessment

The pH of a water sample is a measure of its acidity or basicity. Waters with a low pH can be corrosive and those with a high pH can promote scale formation in pipes and hot water cylinders.

The guideline level for pH in drinking water is 7.0-8.5. Below this range the water will be corrosive and may cause problems with disinfection if such treatment is used.

The alkalinity of a water is a measure of its acid neutralising capacity and is usually related to the concentration of carbonate, bicarbonate and hydroxide. Low alkalinities (25 g/m³) promote corrosion and high alkalinities can cause problems with scale formation in metal pipes and tanks.

The pH of this water is within the NZ Drinking Water Guidelines, the ideal range being 7.0 to 8.0. With the pH and alkalinity levels found, it is unlikely this water will be corrosive towards metal piping and fixtures.

Hardness/Total Dissolved Salts Assessment

The water contains a very low amount of dissolved solids and would be regarded as being soft.

Nitrate Assessment

Nitrate-nitrogen at elevated levels is considered undesirable in natural waters as this element can cause a health disorder called methaemaglobinaemia. Very young infants (less than six months old) are especially vulnerable. The Drinking-water Standards for New Zealand 2005 (Revised 2018) suggests a maximum permissible level of 11.3 g/m³ as Nitrate-nitrogen (50 g/m³ as Nitrate).

Nitrate-nitrogen was detected in this water but at such a low level to not be of concern.

For household use, it is important that the water is not contaminated with human or animal wastes (e.g. from septic tanks or effluent ponds). Bacteriological analyses may be required if such contamination could exist. For further details, please contact this laboratory.

Boron Assessment

Boron may be present in natural waters and if present at high concentrations can be toxic to plants. Boron was found at a low level in this water but would not give any cause for concern.

Metals Assessment

Iron and manganese are two problem elements that commonly occur in natural waters. These elements may cause unsightly stains and produce a brown/black precipitate. Iron is not toxic but manganese, at concentrations above 0.5 g/m³, may adversely affect health. At concentrations below this it may cause stains on clothing and sanitary ware.

Iron was not detected in the water

Manganese was found in this water at a significant level.

Final Assessment

The parameter Total Manganese did NOT meet the guidelines laid down in the publication 'Drinking-water Standards for New Zealand 2005 (Revised 2018)' published by the Ministry of Health for water which is suitable for drinking purposes.

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.

Test Method Description Default Detection Limit Sample N Rouine Water Profile - 1 Filtration, Unpreserved Sample filtration through 0.45µm membrane filter, Performed at Christchurch. - 1 Total Digestion Nitric acid digestion, APHA 3030 E (modified) 23 ^{-d} ed. 2017. - 1 Turbidiy Anaysis using a Hab 2100 Turbidity meter. Anaysed at Hill Laboratories - Chemistry, 101c Waterloo Road, Christchurch. 0.06 NTU 1 pH Anaysis using a Hab 2100 Turbidity meter. Anaysed at Hill Laboratories - Chemistry, 101c Waterloo Road, Christchurch. APHA 4300H. 0.1 pH Units 1 pH Materian Condition of the Laboratories - Chemistry, 101c Waterloo Road, Christchurch. APHA 4300H. 0.1 pH Units 1 pH Materian Dispectific and Hill Laboratories - Chemistry, 101c Waterloo Road, Christchurch. APHA 450H. 0.1 pH Units 1 pH Tratalon to pH 4.5 (Matalianthy Sin antore road, Christchurch. APHA 2220 B Imodifier for Assel analysed at Hill Laboratories - Chemistry, 101c Waterloo Road, Christchurch. APHA 2230 B Imodifier for Materloo Road, Christchurch. APHA 2300 B 23 ^{-dl} 2017. 1.0 g/m ³ as CaCO ₃ 1 Total Akainity Cabuation from Ablatinity and pH, and Hill Laboratories - Chemistry, 101c Waterloo Road, Christchurch. APHA 2300 B 23 ^{-dl} 2017. 1.0 g/m	Sample Type: Aqueous							
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2017 / US EPA 200.8.Control Control CP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0053 g/m31Total CalciumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0053 g/m31Total CopperNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.00053 g/m31Total CopperNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.00053 g/m31Total LeadNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.00011 g/m31Total LeadNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.00011 g/m31Total MagnesiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0011 g/m31Total MagnesiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0011 g/m31Total MagnesiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0011 g/m31Total MagneseNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0053 g/m31Total PotassiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0053 g/m31Total SodiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0053 g/m31Total SodiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0053 g/m31Total SodiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.021 g/m31Total Zinc	Approx Total Dissolved Salts	Calculation: from Electrical Conductivity.	2 g/m ³	1				
2017.2017.2017.Total CalciumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.053 g/m31Total CopperNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.00053 g/m31Total IronNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.021 g/m31Total LeadNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0011 g/m31Total LeadNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0011 g/m31Total MagnesiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0011 g/m31Total MagnesiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0011 g/m31Total ManganeseNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0011 g/m31Total PotassiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0053 g/m31Total PotassiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0053 g/m31Total SodiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0021 g/m31Total SodiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0011 g/m31Total SodiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0011 g/m31Total ZincNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0011 g/	Total Arsenic		0.0011 g/m ³	1				
2017.2017.2017.Total CopperNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017 / US EPA 200.8.0.00053 g/m31Total IronNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.021 g/m31Total LeadNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.00011 g/m31Total LeadNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.00011 g/m31Total MagnesiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.021 g/m31Total ManganeseNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.021 g/m31Total PotassiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.00053 g/m31Total SodiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0053 g/m31Total SodiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.021 g/m31Total SodiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.021 g/m31Total SodiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.021 g/m31Total ZincNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0011 g/m31ChlorideFiltered sample from Christchurch. Ion Chromatography. APHA0.5 g/m31	Total Boron		0.0053 g/m ³	1				
Zotal Iron2017 / US EPA 200.8.Check and the second s	Total Calcium	0	0.053 g/m ³	1				
2017.2017.Total LeadNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017 / US EPA 200.8.0.00011 g/m31Total MagnesiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.021 g/m31Total ManganeseNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017 / US EPA 200.8.0.00053 g/m31Total PotassiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017 / US EPA 200.8.0.00053 g/m31Total PotassiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.001053 g/m31Total SodiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.021 g/m31Total SodiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.021 g/m31Total ZincNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017 / US EPA 200.8.0.0011 g/m31ChlorideFiltered sample from Christchurch. Ion Chromatography. APHA0.5 g/m31	Total Copper	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B 23 rd ed. 2017 / US EPA 200.8.	0.00053 g/m ³	1				
2017 / US EPA 200.8.ConstructionTotal MagnesiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.021 g/m31Total ManganeseNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017 / US EPA 200.8.0.00053 g/m31Total PotassiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.00053 g/m31Total PotassiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.053 g/m31Total SodiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.021 g/m31Total ZincNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017 / US EPA 200.8.0.0011 g/m31ChlorideFiltered sample from Christchurch. Ion Chromatography. APHA0.5 g/m31	Total Iron	0	0.021 g/m ³	1				
2017.2017.Total ManganeseNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017 / US EPA 200.8.0.00053 g/m31Total PotassiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.053 g/m31Total SodiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.021 g/m31Total SodiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.021 g/m31Total ZincNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017 / US EPA 200.8.0.0011 g/m31ChlorideFiltered sample from Christchurch. Ion Chromatography. APHA0.5 g/m31	Total Lead			1				
2017 / US EPA 200.8.ConstrainedTotal PotassiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.053 g/m31Total SodiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.021 g/m31Total ZincNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.0011 g/m31ChlorideFiltered sample from Christchurch. Ion Chromatography. APHA0.5 g/m31	Total Magnesium	o		1				
2017.2017.Total SodiumNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017.0.021 g/m31Total ZincNitric acid digestion, ICP-MS, trace level. APHA 3125 B 23rd ed. 2017 / US EPA 200.8.0.0011 g/m31ChlorideFiltered sample from Christchurch. Ion Chromatography. APHA0.5 g/m31	Total Manganese		0.00053 g/m ³	1				
2017. 2017. Total Zinc Nitric acid digestion, ICP-MS, trace level. APHA 3125 B 23 rd ed. 2017 / US EPA 200.8. 0.0011 g/m ³ Chloride Filtered sample from Christchurch. Ion Chromatography. APHA 0.5 g/m ³	Total Potassium			1				
2017 / US EPA 200.8. 2017 / US EPA 200.8. Chloride Filtered sample from Christchurch. Ion Chromatography. APHA 0.5 g/m ³	Total Sodium	2017.		1				
	Total Zinc	2017 / US EPA 200.8.		1				
	Chloride			1				
Nitrate-N Filtered sample from Christchurch. Ion Chromatography. APHA 0.05 g/m ³ 1 4110 B (modified) 23 rd ed. 2017. 1	Nitrate-N			1				
Sulphate Filtered sample from Christchurch. Ion Chromatography. APHA 0.5 g/m ³ 1 4110 B (modified) 23 rd ed. 2017. 1	Sulphate		0.5 g/m ³	1				

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

Testing was completed between 18-Dec-2021 and 05-Jan-2022. For completion dates of individual analyses please contact the laboratory.

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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Kim Harrison MSc Client Services Manager - Environmental