



ANALYSIS REPORT

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Client:	Hawkes Bay Regional Council	Lab No:	1361041	SPV1
Contact:	Dan Fake	Date Registered:	06-Dec-2014	
	C/- Hawkes Bay Regional Council	Date Reported:	15-Dec-2014	
	Private Bag 6006	Quote No:	62016	
	NAPIER 4142	Order No:	N36993	
		Client Reference:	Whangawehi	
		Submitted By:	Dan Fake	

Sample Type: Aqueous						
Sample Name:		49021 - 3303 Mangakupae Stream past O'briens 05-Dec-2014 9:30 am	49022 - 3304 Whangawehi past O'briens 05-Dec-2014 9:45 am	49018 - 3301 Whangawehi @ Ormonds 05-Dec-2014 11:30 am		
Lab Number:		1361041.1	1361041.2	1361041.3		
Individual Tests						
Escherichia coli	cfu / 100mL	1,400 #1	50 #1	47	-	-
HBRC Summer Rivers						
pH	pH Units	8.4	8.0	8.3	-	-
Total Alkalinity	g/m ³ as CaCO ₃	161	194	176	-	-
Carbonate	g/m ³ at 25°C	2.0	1.1	1.9	-	-
Bicarbonate	g/m ³ at 25°C	193	230	210	-	-
Free Carbon Dioxide	g/m ³ at 25°C	1.4	3.7	1.8	-	-
Total Hardness	g/m ³ as CaCO ₃	157	185	166	-	-
Total Suspended Solids	g/m ³	3.4	4.0	1.5	-	-
Dissolved Calcium	g/m ³	53	64	56	-	-
Dissolved Magnesium	g/m ³	5.9	6.0	6.0	-	-
Dissolved Potassium	g/m ³	2.9	4.9	4.4	-	-
Dissolved Sodium	g/m ³	50	49	48	-	-
Chloride	g/m ³	51	45	46	-	-
Total Nitrogen	g/m ³	0.64	0.21	0.25	-	-
Total Ammoniacal-N	g/m ³	< 0.010	0.023	< 0.010	-	-
Nitrite-N	g/m ³	0.015	< 0.002	< 0.002	-	-
Nitrate-N	g/m ³	0.38	0.006	< 0.002	-	-
Nitrate-N + Nitrite-N	g/m ³	0.40	0.006	< 0.002	-	-
Total Kjeldahl Nitrogen (TKN)	g/m ³	0.24	0.21	0.25	-	-
Dissolved Reactive Phosphorus	g/m ³	0.046	0.042	0.034	-	-
Total Phosphorus	g/m ³	0.061	0.060	0.051	-	-
Reactive Silica	g/m ³ as SiO ₂	11.8	20	18.0	-	-
Sulphate	g/m ³	14.6	27	24	-	-

Analyst's Comments

#1 Statistically estimated count based on the theoretical countable range for the stated method.

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 clean 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.

Sample Type: Aqueous			
Test	Method Description	Default Detection Limit	Sample No
HBRC Summer Rivers		-	1-3
Filtration, Unpreserved	Sample filtration through 0.45µm membrane filter.	-	1-3



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 *, which are not accredited.

Sample Type: Aqueous			
Test	Method Description	Default Detection Limit	Sample No
Total Kjeldahl Digestion	Sulphuric acid digestion with copper sulphate catalyst.	-	1-3
Total Phosphorus Digestion	Acid persulphate digestion.	-	1-3
pH	pH meter. APHA 4500-H+ B 22 nd ed. 2012.	0.1 pH Units	1-3
Total Alkalinity	Titration to pH 4.5 (M-alkalinity), autotitrator. APHA 2320 B (Modified for alk <20) 22 nd ed. 2012.	1.0 g/m ³ as CaCO ₃	1-3
Carbonate	Calculation: from alkalinity and pH, valid where TDS is not >500 mg/L and alkalinity is almost entirely due to hydroxides, carbonates or bicarbonates. APHA 4500-CO ₂ D 22 nd ed. 2012.	1.0 g/m ³ at 25°C	1-3
Bicarbonate	Calculation: from alkalinity and pH, valid where TDS is not >500 mg/L and alkalinity is almost entirely due to hydroxides, carbonates or bicarbonates. APHA 4500-CO ₂ D 22 nd ed. 2012.	1.0 g/m ³ at 25°C	1-3
Free Carbon Dioxide	Calculation: from alkalinity and pH, valid where TDS is not >500 mg/L and alkalinity is almost entirely due to hydroxides, carbonates or bicarbonates. APHA 4500-CO ₂ D 22 nd ed. 2012.	1.0 g/m ³ at 25°C	1-3
Total Hardness	Calculation from Calcium and Magnesium. APHA 2340 B 22 nd ed. 2012.	1.0 g/m ³ as CaCO ₃	1-3
Total Suspended Solids	Filtration of a 2L sample using Whatman 934 AH, Advantec GC-50 or equivalent filters (nominal pore size 1.2 - 1.5µm), gravimetric determination. APHA 2540 D 22 nd ed. 2012.	0.5 g/m ³	1-3
Filtration for dissolved metals analysis	Sample filtration through 0.45µm membrane filter and preservation with nitric acid. APHA 3030 B 22 nd ed. 2012.	-	1-3
Dissolved Calcium	Filtered sample, ICP-MS, trace level. APHA 3125 B 22 nd ed. 2012.	0.05 g/m ³	1-3
Dissolved Magnesium	Filtered sample, ICP-MS, trace level. APHA 3125 B 22 nd ed. 2012.	0.02 g/m ³	1-3
Dissolved Potassium	Filtered sample, ICP-MS, trace level. APHA 3125 B 22 nd ed. 2012.	0.05 g/m ³	1-3
Dissolved Sodium	Filtered sample, ICP-MS, trace level. APHA 3125 B 22 nd ed. 2012.	0.02 g/m ³	1-3
Chloride	Filtered sample. Ferric thiocyanate colorimetry. Discrete Analyser. APHA 4500 Cl ⁻ E (modified from continuous flow analysis) 22 nd ed. 2012.	0.5 g/m ³	1-3
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	1-3
Total Ammoniacal-N	Filtered sample. Phenol/hypochlorite colorimetry. Discrete Analyser. (NH ₄ -N = NH ₄ +N + NH ₃ -N). APHA 4500-NH ₃ F (modified from manual analysis) 22 nd ed. 2012.	0.010 g/m ³	1-3
Nitrite-N	Automated Azo dye colorimetry, Flow injection analyser. APHA 4500-NO ₃ ⁻ I 22 nd ed. 2012.	0.002 g/m ³	1-3
Nitrate-N	Calculation: (Nitrate-N + Nitrite-N) - NO ₂ N. In-House.	0.0010 g/m ³	1-3
Nitrate-N + Nitrite-N	Total oxidised nitrogen. Automated cadmium reduction, flow injection analyser. APHA 4500-NO ₃ ⁻ I 22 nd ed. 2012.	0.002 g/m ³	1-3
Total Kjeldahl Nitrogen (TKN)	Total Kjeldahl digestion, phenol/hypochlorite colorimetry. Discrete Analyser. APHA 4500-N _{org} D. (modified) 4500 NH ₃ F (modified) 22 nd ed. 2012.	0.10 g/m ³	1-3
Dissolved Reactive Phosphorus	Filtered sample. Molybdenum blue colorimetry. Discrete Analyser. APHA 4500-P E (modified from manual analysis) 22 nd ed. 2012.	0.004 g/m ³	1-3
Total Phosphorus	Total phosphorus digestion, ascorbic acid colorimetry. Discrete Analyser. APHA 4500-P B & E (modified from manual analysis) 22 nd ed. 2012. Also modified to include the use of a reductant to eliminate interference from arsenic present in the sample. NWASCA, Water & soil Miscellaneous Publication No. 38, 1982.	0.004 g/m ³	1-3
Reactive Silica	Filtered sample. Heteropoly blue colorimetry. Discrete analyser. APHA 4500-SiO ₂ F (modified from flow injection analysis) 22 nd ed. 2012.	0.10 g/m ³ as SiO ₂	1-3
Sulphate	Filtered sample. Ion Chromatography. APHA 4110 B 22 nd ed. 2012.	0.5 g/m ³	1-3
Escherichia coli	Membrane filtration, Count on mFC agar, Incubated at 44.5°C for 22 hours, MUG Confirmation. Analysed at Hill Laboratories - Microbiology; 1 Clow Place, Hamilton. APHA 9222 G, 22 nd ed. 2012.	1 cfu / 100mL	1-3

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

Samples are held at the laboratory after reporting for a length of time depending on the preservation used and the stability of the analytes being tested. Once the storage period is completed the samples are discarded unless otherwise advised by the client.

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A handwritten signature in blue ink, consisting of several overlapping loops and a long horizontal stroke extending to the right.

Ara Heron BSc (Tech)
Client Services Manager - Environmental Division