HEARING STATEMENT FOR PC 1 HEARING BY PETA LEAN

PC1 PLANS TO CLEAN UP THE WAIKATO RIVER

INTRODUCTION

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first-hand, the effect of foreign owned forests on the community – the decimation of the school, the number of people living in the area fell dramatically leaving fewer farming families to contribute to fire brigades, and other social services. Achieving a 10% increase in water quality in 10 years will obviously not achieve the stated 1870 standards, suggesting that even if improvements are made in 10 years, there will be more controls on landuse after the 10-year period. The uncertainty makes me disinclined to increase investment in my farming enterprise. Beware of unintended consequences. What will be the future landuse of this small property?

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Trustee of Kivell-Lean Trust – Owner of the Land

31 May 2019

Hill Laboratories
TRIED, TESTED AND TRUSTED

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ANALYSIS REPORT

Client:	Kivell-Lean Partnership	**Lab No:**	1719976 DWAPv1
Contact:	Peta Lean	**Date Received:**	08-Feb-2017
	C/- Kivell-Lean Partnership	**Date Reported:**	16-Feb-2017
	994 Victoria Road	**Quote No:**	83440
	RD 7	**Order No:**	
	Hamilton 3287	**Client Reference:**	Water Testing
		Submitted By:	Peta Lean

Sample Type: Aqueous

	Sample Name:	Drinking Water Sample 07-Feb-2017 6:45 pm	**Guideline Value**	**Maximum Acceptable Values (MAV)**
	Lab Number:	1719976.3		
Routine Water + E.coli profile Kit				
Escherichia coli	MPN / 100mL	< 1	-	< 1
Routine Water Profile				
pH	pH Units	7.1	7.0 - 8.5	-
Total Alkalinity	g/m³ as $CaCO_3$	76	-	-
Free Carbon Dioxide	g/m³ at 25°C	12.7	-	-
Total Hardness	g/m³ as $CaCO_3$	75	< 200	-
Electrical Conductivity (EC)	mS/m	21.7	-	-
Electrical Conductivity (EC)	µS/cm	217	-	-
Approx Total Dissolved Salts	g/m³	145	< 1000	-
Total Boron	g/m³	0.27	-	1.4
Total Calcium	g/m³	14.1	-	-
Total Copper	g/m³	0.0195	< 1	2
Total Iron	g/m³	< 0.021	< 0.2	-
Total Magnesium	g/m³	9.5	-	-
Total Manganese	g/m³	< 0.00053	< 0.04 (Staining) < 0.10 (Taste)	0.4
Total Potassium	g/m³	4.5	-	-
Total Sodium	g/m³	11.2	< 200	-
Total Zinc	g/m³	0.133	< 1.5	-
Chloride	g/m³	12.6	< 250	-
Nitrate-N	g/m³	0.74	-	11.3
Sulphate	g/m³	10.0	< 250	-

Note: The Guideline Values and Maximum Acceptable Values (MAV) are taken from the publication 'Drinking-water Standards for New Zealand 2005 (Revised 2008)', Ministry of Health. Copies of this publication are available from http://www.health.govt.nz/publication/drinking-water-standards-new-zealand-2005-revised-2008

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.

Routine Water Assessment for Sample No 1719976.3 - Drinking Water Sample

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/m^3) 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 low amount of dissolved solids and would be regarded as being slightly hard.

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 2008) suggests a maximum permissible level of 11.3 g/m^3 as Nitrate-nitrogen (50 g/m^3 as Nitrate).

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

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/m^3, may adversely affect health. At concentrations below this it may cause stains on clothing and sanitary ware.

Neither element was detected in this water, which is a pleasing feature.
Treatment to remove iron and/or manganese should not be necessary.

Bacteriological Tests
The NZ Drinking Water Standards state that there should be no Escherichia coli (E coli) in water used for human consumption. The presence of these organisms would indicate that other pathogens of faecal origin may be present. Results obtained for Total Coliforms are only significant if the sample has not also been tested for E coli.

Escherichia coli was not detected in this sample.

Final Assessment
All parameters tested for meet the guidelines laid down in the publication 'Drinking-water Standards for New Zealand 2005 (Revised 2008)' 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 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**
Routine Water Profile		-	3
Total Digestion	Nitric acid digestion. APHA 3030 E 22nd ed. 2012 (modified).	-	3
pH	pH meter. APHA 4500-H^+ B 22nd ed. 2012. 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.	0.1 pH Units	3
Total Alkalinity	Titration to pH 4.5 (M-alkalinity), autotitrator. APHA 2320 B (Modified for alk <20) 22nd ed. 2012.	1.0 g/m^3 as $CaCO_3$	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 22nd ed. 2012.	1.0 g/m^3 at 25°C	3
Total Hardness	Calculation from Calcium and Magnesium. APHA 2340 B 22nd ed. 2012.	1.0 g/m^3 as $CaCO_3$	3
Electrical Conductivity (EC)	Conductivity meter, 25°C. APHA 2510 B 22nd ed. 2012.	0.1 mS/m	3
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Approx Total Dissolved Salts	Calculation: from Electrical Conductivity.	2 g/m^3	3
Total Boron	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B 22nd ed. 2012.	0.0053 g/m^3	3
Total Calcium	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B 22nd ed. 2012.	0.053 g/m^3	3
Total Copper	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B 22nd ed. 2012 / US EPA 200.8.	0.00053 g/m^3	3
Total Iron	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B 22nd ed. 2012.	0.021 g/m^3	3
Total Magnesium	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B 22nd ed. 2012.	0.021 g/m^3	3
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Total Zinc	Nitric acid digestion, ICP-MS, trace level. APHA 3125 B 22nd ed. 2012 / US EPA 200.8.	0.0011 g/m^3	3
Chloride	Filtered sample. Ion Chromatography. APHA 4110 B 22nd ed. 2012.	0.5 g/m^3	3
Nitrate-N	Filtered sample. Ion Chromatography. APHA 4110 B 22nd ed. 2012.	0.05 g/m^3	3
Sulphate	Filtered sample. Ion Chromatography. APHA 4110 B 22nd ed. 2012.	0.5 g/m^3	3
Escherichia coli	MPN count using Colilert , Incubated at 35°C for 24 hours. Analysed at Hill Laboratories - Microbiology; 1 Clow Place, Hamilton. APHA 9223 B (2004), 22nd ed. 2012.	1 MPN / 100mL	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.

Graham Corban MSc Tech (Hons)
Client Services Manager - Environmental

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