



Certificate of Analysis

Client:	Revital Fertilisers	Lab No:	2304043	SPV1
Contact:	D Gibson C/- Revital Fertilisers PO Box 8045 New Plymouth 4342	Date Received:	14-Jan-2020	
		Date Reported:	29-Jan-2020	
		Quote No:	98937	
		Order No:	29790	
		Client Reference:	Drilling Mud	
		Submitted By:	D Gibson	

Sample Type: Sludge

Sample Name:	Turangi 9 29-Dec-2019 10:00 am	Turangi 9 21-Dec-2019 10:00 am			
Lab Number:	2304043.1	2304043.2			

Individual Tests

Dry Matter	g/100g as rcvd	23	65	-	-	-
Total Recoverable Barium	mg/kg dry wt	3,300	210	-	-	-
Total Recoverable Potassium	mg/kg dry wt	63,000	21,000	-	-	-
Total Recoverable Sodium	mg/kg dry wt	6,100	1,620	-	-	-
Chloride*	mg/kg dry wt	66,000	16,500	-	-	-
pH	pH Units	10.90	11.57	-	-	-
Total Nitrogen*	g/100g dry wt	0.22	0.06	-	-	-

Heavy metals, screen As,Cd,Cr,Cu,Ni,Pb,Zn,Hg

Total Recoverable Arsenic	mg/kg dry wt	6	8	-	-	-
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	-	-	-
Total Recoverable Chromium	mg/kg dry wt	28	25	-	-	-
Total Recoverable Copper	mg/kg dry wt	35	18	-	-	-
Total Recoverable Lead	mg/kg dry wt	47	20	-	-	-
Total Recoverable Mercury	mg/kg dry wt	< 0.10	< 0.10	-	-	-
Total Recoverable Nickel	mg/kg dry wt	24	23	-	-	-
Total Recoverable Zinc	mg/kg dry wt	74	67	-	-	-

BTEX in Solids by Headspace GC-MS

Benzene	mg/kg dry wt	< 0.5	< 0.07	-	-	-
Toluene	mg/kg dry wt	< 0.5	< 0.07	-	-	-
Ethylbenzene	mg/kg dry wt	< 0.5	< 0.07	-	-	-
m&p-Xylene	mg/kg dry wt	< 0.9	< 0.14	-	-	-
o-Xylene	mg/kg dry wt	< 0.5	< 0.07	-	-	-

Polycyclic Aromatic Hydrocarbons Screening in Solids

1-Methylnaphthalene	mg/kg dry wt	0.78	< 0.04	-	-	-
2-Methylnaphthalene	mg/kg dry wt	1.12	< 0.04	-	-	-
Acenaphthylene	mg/kg dry wt	< 0.09	< 0.04	-	-	-
Acenaphthene	mg/kg dry wt	0.55	< 0.04	-	-	-
Anthracene	mg/kg dry wt	< 0.09	< 0.04	-	-	-
Benzo[a]anthracene	mg/kg dry wt	< 0.09	< 0.04	-	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.09	< 0.04	-	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	mg/kg dry wt	< 0.3	< 0.08	-	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)	mg/kg dry wt	< 0.3	< 0.08	-	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.09	< 0.04	-	-	-
Benzo[e]pyrene	mg/kg dry wt	< 0.09	< 0.04	-	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.09	< 0.04	-	-	-



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Polycyclic Aromatic Hydrocarbons Screening in Solids

Benzo[k]fluoranthene	mg/kg dry wt	< 0.09	< 0.04	-	-	-
Chrysene	mg/kg dry wt	< 0.09	< 0.04	-	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.09	< 0.04	-	-	-
Fluoranthene	mg/kg dry wt	< 0.09	< 0.04	-	-	-
Fluorene	mg/kg dry wt	< 0.2	< 0.04	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.09	< 0.04	-	-	-
Naphthalene	mg/kg dry wt	0.6	< 0.16	-	-	-
Perylene	mg/kg dry wt	< 0.09	0.03	-	-	-
Phenanthrene	mg/kg dry wt	0.20	< 0.04	-	-	-
Pyrene	mg/kg dry wt	< 0.09	< 0.04	-	-	-

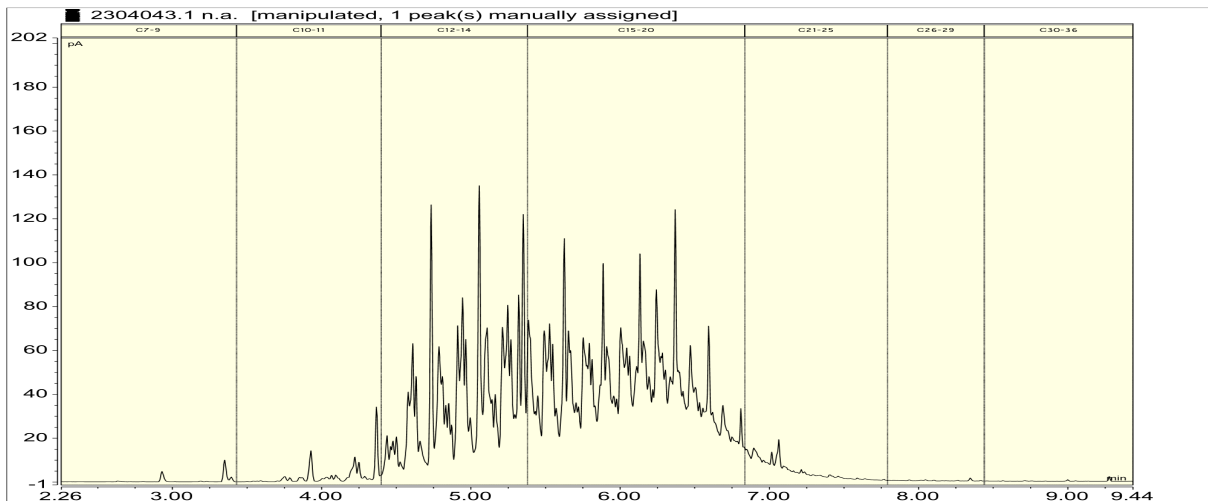
Total Petroleum Hydrocarbons in Solids

C7 - C9	mg/kg dry wt	210 #1	< 19 #2	-	-	-
C10 - C14	mg/kg dry wt	25,000	< 40	-	-	-
C15 - C36	mg/kg dry wt	42,000	159	-	-	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	67,000	181	-	-	-

2304043.1

Turangi 9 29-Dec-2019 10:00 am

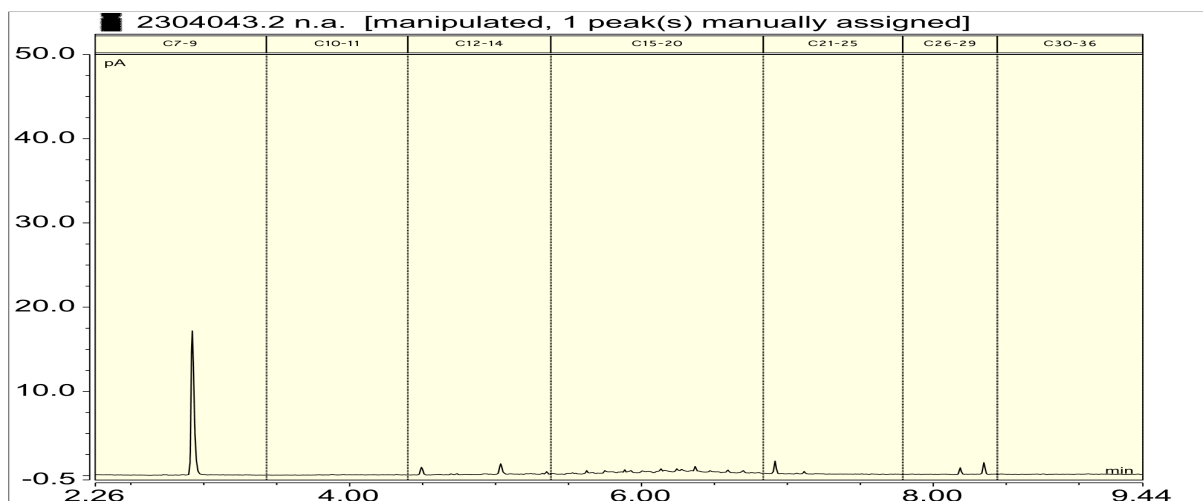
Client Chromatogram for TPH by FID



2304043.2

Turangi 9 21-Dec-2019 10:00 am

Client Chromatogram for TPH by FID



Analyst's Comments

#1 It should be noted that the C7-C9 result for sample 2304043.1 has been adjusted due to the discovery of a laboratory artefact that is produced from the extraction solvent by samples with elevated pH levels.

#2 It should be noted that the C7-C9 result for sample 2304043.2 has been adjusted due to the discovery of a laboratory artefact that is produced from the extraction solvent by samples with elevated pH levels.

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: Sludge			
Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1-2
Environmental Solids Sample Preparation	Air dried at 35°C and sieved, <2mm fraction. Used for sample preparation. May contain a residual moisture content of 2-5%.	-	1-2
Heavy metals, screen As,Cd,Cr,Cu,Ni,Pb,Zn,Hg	Dried sample, <2mm fraction. Nitric/Hydrochloric acid digestion, ICP-MS, screen level.	0.10 - 4 mg/kg dry wt	1-2
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1-2
0.02M potassium dihydrogen ortho-phosphate extraction*	(1:5) ratio of sample (g):0.02M potassium dihydrogen ortho-phosphate extractant (mL), analysis by Ion Chromatography. In House.	-	1-2
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	1-2
Total Recoverable Barium	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.4 mg/kg dry wt	1-2
Total Recoverable Potassium	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	100 mg/kg dry wt	1-2
Total Recoverable Sodium	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	40 mg/kg dry wt	1-2
Chloride*	Ion Chromatography determination of a potassium phosphate extract of an environmental solid.	3 mg/kg dry wt	1-2
pH	pH meter. APHA 4500-H+ B 23 rd ed. 2017.	0.10 pH Units	1-2
Total Nitrogen*	Catalytic Combustion (900°C, O ₂), separation, Thermal Conductivity Detector [Elementar Analyser].	0.05 g/100g dry wt	1-2

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.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.

A handwritten signature in blue ink, appearing to be the name 'Ara Heron', written in a cursive style.

Ara Heron BSc (Tech)
Client Services Manager - Environmental