

Client	🕍 TRIED, TESTEL	Orator And True		R J Hill Laboratories Limited 28 Duke Street. Hamilton 3204 Private Bag 3205 Hamilton 3240, New Zealand
Name	Aurecon NZ limited		T 0508 HILL LAB (44 555 22) Received by: May Alfante T +64 7 858 2000 E mail@hill-labs.co.nz	
	s Tetihi level 3 / 110 C	arlton Con roo	ad.	W www.hill-taboratories.com
	Newmarket , Auckland			EGIVINOEGO PURDAKARAKA
	02108534125	Fax		Sent to Date & Time:
	Reference 521290-064		<u></u>	Name:
Quote I	No 126272 Orde	er Number		Please tick if you Signature: require COC to be faxed back
	ary Contact Tiana Hill	·)	(8786	Received at Date & Time:
	nitted By Andrew Allico		169	Name:
Charg	ge To Aur Can NZ limi		301	Signature:
Resu	Its To Reports will be emailed to Prin Additional Reports will be sent	ary Contact by default. as specified below.		Condition Temp:
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☑ c	other <u>inzervlabs</u>	Coaurecongr	unp.com	Sample Analysis details checked Signature:
	ADDITIONALINA	ORNATION		Priority
Esd	lat files please.			☐ Low ☑ Normal ☐ High
Vle	are advise before dispo	sal		Urgent (ASAP, extra charge applies, please contact the lab first)
				<u>.</u>
		·		Requested Reporting Date:
Samp Waters		Geothermal	Pot1	Potable Water (LAS/EU) Pot2 Potable Water (NZDWS)
	GW: Ground Water L SW Surface Water S	Leachafe Saline		Audit Monitoring Pot3 Potable Water (other) Check Monitoring Pool Swimming/Spa Pool
	TW Trade Waste	**************************************		
Solids Other		E Sediment Miscellaneous	SL FS	Sludge PL Plant FS Fish/shellfish/biota BM BM Biological Material
No.	Sample Name	Sample Date & Time	Sample Type	Tests Required
1	BH 46_000.4-0.5	19-08-2024	Soil	HM(7), TPH, PAH, Asb
2	BH46-1-4-1-6	19-08-2024	Sei: 1	HM (7), TPH, PAH, ASB
3	BH45_0.8-1.0	19-08-2024	Soil	MM (7), tri-i, PAH, Asb
4	BH51-5-0-5-45	15-08-2024	Soit	HM(7)
5	BHS1-8-0-8-45	15-08-2024	Soil	HM (7)
6	BHS1-12-0-12-33	15-08-2024	Suil	tim(7)
7				
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 ✓ mail@hill-labs.co.nz
 ♦ www.hill-labs.co.nz

Job Information Summary

Page 1 of 2

Client: Aurecon New Zealand Limited

Contact: Andrew Allcock

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 **Lab No:** 3655467

Date Registered: 22-Aug-2024 6:07 pm

Priority: High Quote No: 126272

Order No:

Client Reference: 521290 - 064 Add. Client Ref: Sampled: 19/08/24

Submitted By: Tiana Hill

Charge To: Aurecon New Zealand Limited 27-Aug-2024 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	BH46_0.4-0.5	Soil	PSoil500Asb	New Zealand Guidelines Semi Quantitative Asbestos in Soil
2	BH46_1.4-1.6	Soil	PSoil500Asb	New Zealand Guidelines Semi Quantitative Asbestos in Soil
3	BH45_0.8-1.0	Soil	PSoil500Asb	New Zealand Guidelines Semi Quantitative Asbestos in Soil

Summary of Methods

Sample Type: Soil							
Test	Method Description	Default Detection Limit	Sample No				
New Zealand Guidelines Semi Quantitative Asbestos in Soil							
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1-3				
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1-3				
Moisture	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1-3				
Sample Fraction >10mm	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-3				
Sample Fraction <10mm to >2mm	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-3				
Sample Fraction <2mm	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-3				
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-3				
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-3				
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3				
Asbestos in ACM as % of Total Sample	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3				

Sample Type: Soil						
Test	Method Description	Default Detection Limit	Sample No			
Weight of Asbestos as Fibrous Asbestos (Friable)	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3			
Asbestos as Fibrous Asbestos as % of Total Sample	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3			
Weight of Asbestos as Asbestos Fines (Friable)	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3			
Asbestos as Asbestos Fines as % of Total Sample	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3			
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3			

Quote No

126272

Primary Contact	Tiana Hill	298786

Submitted By

Aurecon New Zealand Limited 32359 **Client Name**

Te Tihi Level 3 / 110 Carlton Gore Road Address

Newmarket, Auckland 1023 Postcode

021 0883 4125 Mobile Phone

nzenvlabs@aurecongroup.com

Aurecon New Zealand Limited 32359 **Charge To**

521290-064 Client Reference

Order No

Email

Reports will be emailed to Primary Contact by default. **Results To** Additional Reports will be sent as specified below.

☑ Email Primary Contact ☐ Email Submitter

☐ Other

Esdat files please. Please advise before disposal. BHU6-01 GW Samples - con these please a separate COC + with some be put on gaste# and

R J Hill Laboratories Limited 28 Duke Street, Hamilton 3204 Private Bag 3205 Hamilton 3240, New Zealand

0508 HILL LAB (44 555 22)

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mail@hill-labs.co.nz

www.hill-laboratories.com

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Received by: Olivia Tod



Sent to	Date & Time:	27.08.2024
Hill Laboratories	Name:	T. Hill
Tick if you require COC to be emailed back	Signature:	má
Received at	Date & Time:	
Hill Laboratories	Name:	
	Signature:	
Condition		T€mp:
☐ Room Temp [☐ Chilled	□ Frozen // ⟨ <

Priority [Low	■ Normal	✓ High
Urgent	(ASAP, extra	charge applies,	please contact lab first)

Signature:

☐ Sample and Analysis details checked

v	quotett and ellent reterine please;			Requested Reporting Date:		
No.	Sample Name	Sample Date	Sample Time	Sample Type	Tests Required (if not as per Quote)	
1	BH46_3.5-3.6	23.08.24		Soil	HM(7), TPH, PAH, ASS	
2	BH46_8.5-8.7	23.08.24		Soil	HM(7)	
3	BH46_12.0-12.1	23.08.24		Soil	HM(7)	
4	BH46_01	28-08-24		Water	SVOCs, TSS, Dis HM, PAH, TPH	
5	BH25_0.2-0.3	26.08.24		Soil	HM (7), TPH, PAH, ASb	
6	BH 25 - 15 - 16	26.08.24		Soil	HM (7)	
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Job Information Summary

Page 1 of 2

Client: Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 **Lab No:** 3658961

Date Registered: 28-Aug-2024 1:15 pm

Priority: High Quote No: 126272

Order No:

Client Reference: 521290-064
Add. Client Ref: Sampled 26/08/24

Submitted By: Tiana Hill

Charge To: Aurecon New Zealand Limited 30-Aug-2024 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	BH25_0.2-0.3	Soil	PSoil500Asb	New Zealand Guidelines Semi Quantitative Asbestos in Soil, Asbestos in Soil ESdat Electronic Transfer

Summary of Methods

Sample Type: Soil					
Test	Method Description	Default Detection Limit	Sample No		
New Zealand Guidelines Semi Quantita	tive Asbestos in Soil				
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1		
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1		
Moisture	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1		
Sample Fraction >10mm	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1		
Sample Fraction <10mm to >2mm	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1		
Sample Fraction <2mm	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1		
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1		
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1		
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1		
Asbestos in ACM as % of Total Sample	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1		
Weight of Asbestos as Fibrous Asbestos (Friable)	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1		
Asbestos as Fibrous Asbestos as % of Total Sample	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1		

Sample Type: Soil						
Test	Method Description	Default Detection Limit	Sample No			
Weight of Asbestos as Asbestos Fines (Friable)	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1			
Asbestos as Asbestos Fines as % of Total Sample	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1			
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1			
Asbestos in Soil ESdat Electronic Trans	sfer					
Amosite	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0 Detect	1			
Chrysotile	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0 Detect	1			
Crocidolite	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0 Detect	1			

ill Laboratories TRIED, TESTED AND TRUSTED

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Quote	NA
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126272

Primary Contact	Tiana Hill	298786
Submitted By		

Submitted By

Aurecon New Zealand Limited 32359 **Client Name**

Address

Te Tihi Level 3 / 110 Carlton Gore Road

Newmarket, Auckland

1023 Postcode

Phone

021 0883 4125 Mobile

nzenvlabs@aurecongroup.com

Charge To

Aurecon New Zealand Limited

32359

Client Reference

521290-064

Order No

Results To

Reports will be emailed to Primary Contact by default. Additional Reports will be sent as specified below.

☑ Email Primary Contact

Email Submitter

☐ Other

Esdat files please. Please advise before disposal. BHU6-01 GW Samples - con these please be put on a seperate COC + with some quotest and client reference please.

R J Hill Laboratories Limited 28 Duke Street, Hamilton 3204 Private Bag 3205 Hamilton 3240, New Zealand

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mail@hill-labs.co.nz

www.hill-laboratories.com

Date Recv: 28-Aug-24 12:58

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Received by: Olivia Tod



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Hill	Laboratories	Name:	T. Hill
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Requested Reporting Date:					

No.	Sample Name	Sample Date	Sample Time	Sample Type	Tests Required (if not as per Quote)
1	BH46_3.5-3.6	23.08.24		Soil	HM(7), TPH, PAH,
2	BH46_8.5-8.7	23.08.24		Soil	HM(7)
3	BH46_12.0-12.1	23.08-24		Soil	HM(7)
4	BH46_01	28-08-24		Water	SVOCs, TSS, Dis HM, PAH, TPH
5	BH25_0.2-0.3	26.08.24		Soil	HM (7), TPH, PAH, ASb
6	BH 25 - 15 - 1.6	26.08.24		Soil	HM (7)
7					
8					
9					
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11					
12					

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Date Registered:

♦ 0508 HILL LAB (44 555 22)
 ♦ +64 7 858 2000
 ☑ mail@hill-labs.co.nz
 ⊕ www.hill-labs.co.nz

29-Aug-2024 11:16 am

Job Information Summary

Page 1 of 2

Client: Aurecon New Zealand Limited Lab No: 3658963

Contact: Tiana Hill

C/- Aurecon New Zealand Limited **Priority:** High

PO Box 9762 Quote No: 126272
Newmarket Order No:
Auckland 1149 Client Reference: 521290-064

Add. Client Ref:

Submitted By: Tiana Hill

Charge To: Aurecon New Zealand Limited Target Date*: 02-Sept-2024 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	BH46_3.5-3.6 23-Aug-2024	Soil	GSoil300	Heavy Metals, Screen Level, TPH Oil Industry Profile + PAHscreen
2	BH46_8.5-8.7 23-Aug-2024	Soil	GSoil300	Heavy Metals, Screen Level
3	BH46_12.0-12.1 23-Aug-2024	Soil	GSoil300	Heavy Metals, Screen Level
4	BH25_0.2-0.3 26-Aug-2024	Soil	GSoil300	Heavy Metals, Screen Level, TPH Oil Industry Profile + PAHscreen
5	BH25_1.5-1.6 26-Aug-2024	Soil	GSoil300	Heavy Metals, Screen Level

Summary of Methods

Sample Type: Soil							
Test	Method Description	Default Detection Limit	Sample No				
Individual Tests							
Environmental Solids Sample Drying	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-5				
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1, 4				
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry), gravimetry. (Free water removed before analysis, nonsoil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1, 4				
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	BaP Potency Equivalence calculated from; Benzo(a) anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a) pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	1, 4				
Benzo[a]pyrene Toxic Equivalence (TEF)	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	1, 4				
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.010 - 70 mg/kg dry wt	1, 4				

^{*} As the samples require analysis at a Hill Labs location that is different to where they were received, the Target Date for reporting has been extended.

Sample Type: Soil							
Test	Method Description	Default Detection Limit	Sample No				
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-5				
Total Petroleum Hydrocarbons in Soil			•				
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	4				
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	20 mg/kg dry wt	1, 4				
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1, 4				
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1, 4				
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1, 4				



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Quote No	126272	
Primary Contac	t Tiana Hill	298786
Submitted By		

Aurecon New Zealand Limited 32359 **Client Name** Te Tihi Level 3 / 110 Carlton Gore Road Address Newmarket, Auckland 1023 Postcode 021 0883 4125 Phone Mobile nzenviabs@aurecongroup.com Email

Aurecon New Zealand Limited **Charge To**

521290-064 Client Reference

Order No

Reports will be emailed to Primary Contact by default. Additional Reports will be sent as specified below. Results To

☐ Email Submitter

32359

Other

Esdat files please. Please advise before disposal. BH46-01 GW samples - con these please a seperate COC + with some be put on quote# and client reference bleave !)

R J Hill Laboratories Limited 28 Duke Street, Hamilton 3204 Private Bag 3205 Hamilton 3240, New Zealand

Date Recv. 28-Aug-24 13:01

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0508 HILL LAB (44 555 22)

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mail@hill-labs.co.nz

www.hill-laboratories.com

Received by: Olivia Tod

Sent to	Date & Time:	DVRECORD ** *** 27.08.2024				
Hill Laboratories	Name:	T. Hill				
Tick if you require COC to be emailed back	Signature:	al				
Received at	Date & Time:					
Hill Laboratories	Name:					
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Condition		Temp:				
☐ Room Temp [☐ Chilled	☐ Frozen				
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Priority Lo	w 🔲 No	ormal 🗹 High				

Urgent (ASAP, extra charge applies, please contact lab first)

ય	note# ad client' reference	please:j	Req	uested Reporting	Date:
No.	Sample Name	Sample Date	Sample Time	Sample Type	Tests Required (if not as per Quote)
1	BH46_3.5-3.6	23.08.24		Soil	HM(7), TPH, PAH, ASS
2	BH46_8.5-8.7	23.08.24		Soil	HM(7)
3	BH46_12.0-12.1	23.08-24		Soil	HM(7)
4	BH46_01	28-08-24		Water	SVOCs, TSS, Dis HM, PAH, TPH
5	BH25_0-2-0-3	26.08.24		Soil	HM (7), TPH, PAH, ASb
6	BH25-15-16	26.08.24		Sail	HM (7)
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 ⊕ www.hill-labs.co.nz

Job Information Summary

Page 1 of 1

Client: Aurecon New Zealand Limited

Contact: Aaron Graham

C/- Aurecon New Zealand Limited

PO Box 2292 Tauranga 3140 **Lab No:** 3658976

Date Registered: 29-Aug-2024 10:10 am

Priority: High 126272

Order No:

Client Reference: 521290-064

Add. Client Ref:

Submitted By: Aaron Graham

Charge To: Aurecon New Zealand Limited 30-Aug-2024 4:30 pm

Samples

	Samples S							
No	Sample Name	Sample Type	Containers	Tests Requested				
1	BH46_01 28-Aug-2024	Ground Water	Org500, TPH250, TOC125, UPte100	Hold Cold				

Lab No: 3658976 Hill Labs Page 1 of 1



126272 **Quote No** Tiana Hill 298786 **Primary Contact Submitted By** Aurecon New Zealand Limited 32359 **Client Name** Te Tihi Level 3 / 110 Carlton Gore Road Address Newmarket, Auckland 1023 Postcode 021 0883 4125 Mobile Phone nzenvlabs@aurecongroup.com Email Aurecon New Zealand Limited 32359 **Charge To** 521290-064 Client Reference Order No Reports will be emailed to Primary Contact by default. **Results To** Additional Reports will be sent as specified below. Email Primary Contact ☐ Email Submitter Email Client Email Other andrew.allcock@aurecongroup.com Other

Esdat files please. Please advise before disposal.

R J Hill Laboratories Limited 28 Duke Street, Hamilton 3204 Private Bag 3205 Hamilton 3240, New Zealand

+64 7 858 2000

Requested Reporting Date:

Received by: Sanaya Hansotia 0508 HILL LAB (44 555 22)



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Hill Laboratories	Name: T. Hill					
Tick if you require COC to be emailed back	Signature:					
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Priority Lo	W Normal AP, extra charge applies, please	3 3 - 3				

Sample Sample Sample Name No. Date Time Sample Type Tests Required (if not as per Quote) BH06-0-4-0-5 Soil ASB, TPH, PAH 29.08.24 BH06-1-4-1-5 2 Soil 29.08.24 HM(7 3 4 5 6 7 8 9 10 11 12

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Job Information Summary

Page 1 of 2

Client: Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 **Lab No:** 3663691

Date Registered: 04-Sept-2024 12:34 pm

Priority: High 126272

Order No:

Client Reference: 521290-064

Add. Client Ref: Sampled: 29/08/24

Submitted By: Tiana Hill

Charge To: Aurecon New Zealand Limited Target Date: 06-Sept-2024 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	BH06_0.4-0.5	Soil	PSoil500Asb	New Zealand Guidelines Semi Quantitative Asbestos in Soil

Summary of Methods

Sample Type: Soil								
Test	Method Description	Default Detection Limit	Sample N					
New Zealand Guidelines Semi Quantitative Asbestos in Soil								
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1					
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1					
Moisture	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1					
Sample Fraction >10mm	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1					
Sample Fraction <10mm to >2mm	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1					
Sample Fraction <2mm	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1					
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1					
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1					
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1					
Asbestos in ACM as % of Total Sample	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1					
Weight of Asbestos as Fibrous Asbestos (Friable)	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1					
Asbestos as Fibrous Asbestos as % of Total Sample	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1					

Sample Type: Soil								
Test	Method Description	Default Detection Limit	Sample No					
Weight of Asbestos as Asbestos Fines (Friable)	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1					
Asbestos as Asbestos Fines as % of Total Sample	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1					
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1					



126272 **Quote No Primary Contact** Tiana Hill 298786 Submitted By **Client Name** Aurecon New Zealand Limited 32359 Te Tihi Level 3 / 110 Carlton Gore Road Newmarket, Auckland 1023 Postcode 021 0883 4125 Phone Mobile nzenvlabs@aurecongroup.com Email **Charge To** Aurecon New Zealand Limited 32359 521290-064 Client Reference Order No Reports will be emailed to Primary Contact by default. Results To Additional Reports will be sent as specified below. Email Primary Contact ☐ Email Submitter Other Esdat file's please. Please advise before disposal.

MANAGAGRACIUST

R J Hill Laboratories Limited 28 Duke Street, Hamilton 3204 Private Bag 3205 Hamilton 3240, New Zealand

> +64 7 858 2000 mail@hill-labs.co.nz

0508 HILL LAB (44 555 22)

366 4138

Received by: Olivia Tod



- www.niii-iaboratories.c	om 3130041300	
	AHRIODYHIA	
Sent to Hill Laboratories	Date & Time: 2° 0°(· 2	4
Tick if you require COC to be emailed back	Name:	
Received at Hill Laboratories	Date & Time: Name:	
	Signature:	
Condition ☐ Room Temp ☐] Chilled □ Frozen	femp: 13.5
☐ Sample and Analys Signature:	is details checked	
Priority Low	│ Normal 🎏	High

Urgent (ASAP, extra charge applies, please contact lab first)

Requested Reporting Date: Sample Sample No. Sample Name Date Tests Required (if not as per Quote) Time Sample Type BH06-0-4-0-5 29.08.24 Soil ASB, TPH, PAH BH06-1-4-1.5 2 29.08.24 Soil HM(7 3 4 5 6 7 8 9 10 11 12

Continued on next page



55 0508 HILL LAB (44 555 22) **\(\sigma +64 7 858 2000 \)** mail@hill-labs.co.nz www.hill-labs.co.nz

Job Information Summary

Page 1 of 2

Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 Lab No: 3664138

Date Registered:

05-Sept-2024 9:03 am

Priority: High **Quote No:** 126272

Order No:

Client Reference: 521290-064

Add. Client Ref:

Submitted By: Tiana Hill

Charge To: Aurecon New Zealand Limited Target Date*: 09-Sept-2024 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	BH06_0.4-0.5 29-Aug-2024	Soil	GSoil300	Heavy Metals, Screen Level, TPH Oil Industry Profile + PAHscreen
2	BH06_1.4-1.5 29-Aug-2024	Soil	GSoil300	Heavy Metals, Screen Level

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 Labs, 28 Duke Street, Frankton, Hamilton 3204.

Test	Method Description	Default Detection Limit	Sample N
Individual Tests			
Environmental Solids Sample Drying	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-2
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry), gravimetry. (Free water removed before analysis, nonsoil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	BaP Potency Equivalence calculated from; Benzo(a) anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j) fluoranthene x 0.1 + Benzo(a) pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	1
Benzo[a]pyrene Toxic Equivalence (TEF)	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	1
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.010 - 70 mg/kg dry wt	1
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-2
Total Petroleum Hydrocarbons in Soil			
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	20 mg/kg dry wt	1

Lab No: 3664138 Hill Labs Page 1 of 2

^{*} As the samples require analysis at a Hill Labs location that is different to where they were received, the Target Date for reporting has been extended.

Sample Type: Soil								
Test	Method Description	Default Detection Limit	Sample No					
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1					
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1					
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1					



Quote No

126272

Primary Contact

Tiana Hill

298786

Submitted By

Client Name

Aurecon New Zealand Limited 32359

Address

Te Tihi Level 3 / 110 Carlton Gore Road

Newmarket, Auckland

Postcode

1023

Phone

Mobile

021 0883 4125

Email Charge To

nzenvlabs@aurecongroup.com

Aurecon New Zealand Limited

32359

Client Reference

521290-064

Order No

Results To

Reports will be emailed to Primary Contact by default. Additional Reports will be sent as specified below.

Sample Name

BH36 - 0.6-0.7

BH36-2.5-2.6

BH06_12.0-12.1

BH25-16.5-16.6

BH46_3.5-3.6

BH17-1.5-1.95

BH17-7.5-7.95

BH17-13.5-13.64

☐ Email Submitter

Sample

Date

12.04.24

12.09.24

12.09.24

12.09.24

23.08.24

5.09.24

5.09.24

6-09-24

☐ Other

No.

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ADDIONALNIDRMATON

Esdat files please. Please advise before disposal.

R J Hill Laboratories Limited 28 Duke Street, Hamilton 3204 Private Bag 3205 Hamilton 3240, New Zealand

Received by: Olivia Tod

0508 HILL LAB (44 555 22)

+64 7 858 2000

Priority

☐ Low

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mail@hill-labs.co.nz

www.hill-laboratories.com

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Sent to Hill Laboratories	Date & Time: 12.09.24	1:00pm
/ Laboratories	Name: liana Hill	
Tick if you require COC to be emailed back	Signature: Color	
Received at	Date & Time:	
Hill Laboratories	Name:	
	Signature:	
Condition		Temp:
☐ Room Temp	☐ Chilled ☐ Frozen	
☐ Sample and Anal	ysis details checked	

Sample Time	Sample Type	Tests Required (if not as per Quote)
	Soil	HM (7), Asb (sa), TPH, PA
	Soil	HM (7)
	(1	HM (7)
	и	HM (7)
	(ı	Asb (sa)
	1	

☐ Normal

Urgent (ASAP, extra charge applies, please contact lab first)

✓ High

1100 (30)	
HM(7)	
HM (7)	
HM (7)	
	Continued on next page



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 ♦ +64 7 858 2000
 ☑ mail@hill-labs.co.nz
 ⊕ www.hill-labs.co.nz

Job Information Summary

Page 1 of 2

Client: Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 **Lab No:** 3670623

Date Registered: 12-Sept-2024 1:25 pm

Priority: High Quote No: 126272

Order No:

Client Reference: 521290-064

Add. Client Ref:

Submitted By: Tiana Hill

Charge To: Aurecon New Zealand Limited 16-Sept-2024 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	BH36_0.6-0.7 12-Sept-2024	Soil	PSoil500Asb	New Zealand Guidelines Semi Quantitative Asbestos in Soil
2	BH46_3.5-3.6 23-Aug-2024	Soil	PSoil500Asb	New Zealand Guidelines Semi Quantitative Asbestos in Soil

Summary of Methods

Sample Type: Soil						
Test	Method Description	Default Detection Limit	Sample No			
New Zealand Guidelines Semi Quantit	ative Asbestos in Soil					
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1-2			
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1-2			
Moisture	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1-2			
Sample Fraction >10mm	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-2			
Sample Fraction <10mm to >2mm	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-2			
Sample Fraction <2mm	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-2			
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-2			
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-2			
Weight of Asbestos in ACM (Non- Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-2			
Asbestos in ACM as % of Total Sample	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2			
Weight of Asbestos as Fibrous Asbestos (Friable)	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-2			

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
Asbestos as Fibrous Asbestos as % of Total Sample	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2
Weight of Asbestos as Asbestos Fines (Friable)	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-2
Asbestos as Asbestos Fines as % of Total Sample	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2



Hill Laboratories TRIED, TESTED AND TRUSTED

Ô٠	ıote	Nο
ωı	ote	NO

126272

Primary Contact

Tiana Hill

298786

Submitted By

Client Name

Aurecon New Zealand Limited 32359

Address

Te Tihi Level 3 / 110 Carlton Gore Road

Newmarket, Auckland

Postcode 1023

Phone

Mobile

021 0883 4125

Email

nzenvlabs@aurecongroup.com

Charge To

Aurecon New Zealand Limited

32359

Client Reference

521290-064

Order No

Reports will be emailed to Primary Contact by default. Additional Reports will be sent as specified below.

☐ Email Submitter

Email Client

Results To

☐ Other

The state of the s

Esdat files please. Please advise before disposal.

R J Hill Laboratories Limited 28 Duke Street, Hamilton 3204 Private Bag 3205 Hamilton 3240, New Zealand

0508 HILL LAB (44 555 22)

+64 7 858 2000

mail@hill-labs.co.nz

www.hill-laboratories.com

Requested Reporting Date:

Received by: Olivia Tod

e enina	F CUSTODY RECORD
Sent to	Date & Time: 12.09.24 1:00pm
Hill Laboratories	Name: liana Hill
Tick if you require COC to be emailed back	Signature: LefvA
Received at	Date & Time:
Hill Laboratories	Name:
	Signature:
Condition	Ţemp:
☐ Room Temp	☐ Chilled ☐ Frozen
☐ Sample and Anal	ysis details checked .
Signature:	
Priority Lo	w □ Normal ☑ High

Urgent (ASAP, extra charge applies, please contact lab first)

No.	Sample Name	Sample Date	Sample Time	Sample Type	Tests Required (if not as per Quote)
1	BH36 - 0.6-0.7	12.04.24		Soil	HM (7), Asb (sa), TPH, PAL
2	BH36-2.5-2.6	12.09.24		Soil	HM (7)
3	BH06_12.0-12.1	12.09.24		(1	HM (7)
4	BH25-16.5-16.6	12.09.24		U	HM (7)
5	BH46_3.5-3.6	23.08.24		(q	Asb (sa)
6	BH17_1.5-1.95	5.09.24		le	HM(7)
7	BH17-7.5-7.95	5.09.24	•	lı	HM (7)
8	BH17-13.5-13.64	6-09-24	° ۾	11	HM (7)
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12					

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 ✓ mail@hill-labs.co.nz
 ♦ www.hill-labs.co.nz

Job Information Summary

Page 1 of 2

Client: Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 **Lab No:** 3670643

Date Registered: 13-Sept-2024 9:47 am

Priority: High Quote No: 126272

Order No:

Client Reference: 521290-064

Add. Client Ref:

Submitted By: Tiana Hill

Charge To: Aurecon New Zealand Limited 17-Sept-2024 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested	
1	BH36_0.6-0.7 12-Sept-2024	Soil	GSoil300	Heavy Metals, Screen Level, TPH Oil Industry Profile + PAHscreen	
2	BH36_2.5-2.6 12-Sept-2024	Soil	GSoil300	Heavy Metals, Screen Level	
3	BH06_12.0-12.1 12-Sept-2024	Soil	GSoil300	Heavy Metals, Screen Level	
4	BH25_16.5-16.6 12-Sept-2024	Soil	GSoil300	Heavy Metals, Screen Level	
5	BH17_1.5-1.95 05-Sept-2024	Soil	GSoil300	Heavy Metals, Screen Level	
6	BH17_7.5-7.95 05-Sept-2024	Soil	GSoil300	Heavy Metals, Screen Level	
7	BH17_13.5-13.64 06-Sept-2024	Soil	GSoil300	Heavy Metals, Screen Level	

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 Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-7
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry), gravimetry. (Free water removed before analysis, nonsoil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	BaP Potency Equivalence calculated from; Benzo(a) anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j) fluoranthene x 0.1 + Benzo(a) pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	1
Benzo[a]pyrene Toxic Equivalence (TEF)	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	1
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.010 - 70 mg/kg dry wt	1

Lab No: 3670643 Hill Labs Page 1 of 2

^{*} As the samples require analysis at a Hill Labs location that is different to where they were received, the Target Date for reporting has been extended.

Sample Type: Soil							
Test	Method Description	Default Detection Limit	Sample No				
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-7				
Total Petroleum Hydrocarbons in Soil							
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	20 mg/kg dry wt	1				
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1				
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1				
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1				



	ATILL	.dDS	- i · ·	R J Hill Laboratories Limited 28 Duke Street Frankton 3204	ob No: Date Recv: 18-Sep-24 15:43
Quot	e No 126272			Private Bag 3205 Hamilton 3240 New Zealand	367 4826
Prim	ary Contact Tiana Hill		298786	% 0508 HILL LAB (44 555 22)	Received by: Olivia Tod
Subn	nitted By Tiana Hill		298786	← +64 7 858 2000☑ mail@hill-labs.co.nz	
Clien	t Name Aurecon Ne	w Zealand Limited	32359	⊕ www.hill-labs.co.nz	3136748260
Addres	ss PO Box 2292, Tauran	ga 3140		CHANDIO	STODYREGORD
				Sent to Date	& Time: 18/09/24
Phone	07 578 6183 Moi	bile		Hill Labs	e: Hannah
Email	nzenvlabs@aurecong	roup.com		to be amplified back	
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Please	inform the laboratory if you would like	this information reported.		Sample & Analysis deta	ils checked
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	•			Priority Low	☐ Normal ▼ High
				Urgent (ASAP, extra cha	arge applies, please contact lab first)
				NOTE: The estimated turnaround tim and analyses specified on this quote is day of receipt of the samples at the lai	e for the types and number of samples s by 4:30 pm, 7 working days following the
				day of receipt of the samples at the fa	boratory.
	•				
	ted Sample Types			Requested Reporting Date:	
	ted Sample Types oil), Ground Water (GW)			Requested Reporting Date:	
		Sample Date/Time	Sample Type	_	
Soil (S	Sample Name	Sample Date/Time		Tests Required	DA-ET, TPHOIBXP,
Soil (s	Sample Name BH38 _ 1.1 - 1.2	18.09.24	1 102	HM's Soil, Ash Soil	Svoc sc
Soil (S	Sample Name	18.09.24		HM's Soil, Ash Soil	Svoc sc
Soil (s	Sample Name BH38 _ 1.1 - 1.2	18.09.24	1 102	HM's Soil, Ash Soil	
Soil (s No. 1 2	Sample Name BH38 _ 1.1 - 1.2	18.09.24	1 102	HM's Soil, Ash Soil	Svoc sc
Soil (s No. 1 2 3 4	Sample Name BH38 _ L 1 - 1. 2 BH14 _ O. 6 - 0.	18.09.24	1 102	HM's Soil, Ash Soil	Svoc sc
Soil (S No. 1 2 3	Sample Name BH38 _ L 1 - 1. 2 BH14 _ O. 6 - 0.	18.09.24	1 102	HM's Soil, Ash Soil	Svoc sc
Soil (s No. 1 2 3 4	Sample Name BH38 _ L 1 - 1. 2 BH14 _ O. 6 - 0.	18.09.24	1 102	HM's Soil, Ash Soil	Svoc sc
Soil (s No. 1 2 3 4 5	Sample Name BH38 _ L 1 - 1. 2 BH14 _ O. 6 - 0.	18.09.24	1 102	HM's Soil, Ash Soil	Svoc sc
Soil (s No. 1 2 3 4 5	Sample Name BH38 _ L 1 - 1. 2 BH14 _ O. 6 - 0.	18.09.24	1 102	HM's Soil, Ash Soil	Svoc sc
Soil (s No. 1 2 3 4 5 6 7	Sample Name BH38 _ L 1 - 1. 2 BH14 _ O. 6 - 0.	18.09.24	1 102	HM's Soil, Ash Soil	Svoc sc
Soil (s No. 1 2 3 4 5 6	Sample Name BH38 _ 1 _ 1 _ 2 BH14 _ 0.6 - 0.	18.09.24	1 102	HM's Soil, Ash Soil	Svoc sc



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Job Information Summary

Page 1 of 2

Client: Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 **Lab No:** 3674826

Date Registered: 18-Sept-2024 3:55 pm

Priority: High Quote No: 126272

Order No:

Client Reference: 521290-64

Add. Client Ref:

Submitted By: Tiana Hill

Charge To: Aurecon New Zealand Limited 20-Sept-2024 4:30 pm

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	BH38_1.1-1.2 18-Sept-2024	Soil	cPSoil500Asb	New Zealand Guidelines Semi Quantitative Asbestos in Soil
2	BH14_0.6-0.7 16-Sept-2024	Soil	PSoil500Asb	New Zealand Guidelines Semi Quantitative Asbestos in Soil

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 Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil						
Test	Method Description	Default Detection Limit	Sample No			
New Zealand Guidelines Semi Quant	itative Asbestos in Soil					
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1-2			
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1-2			
Moisture	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1-2			
Sample Fraction >10mm	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-2			
Sample Fraction <10mm to >2mm	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-2			
Sample Fraction <2mm	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-2			
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-2			
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-2			
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-2			
Asbestos in ACM as % of Total Sample	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2			
Weight of Asbestos as Fibrous Asbestos (Friable)	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-2			

Lab No: 3674826 Hill Labs Page 1 of 2

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
Asbestos as Fibrous Asbestos as % of Total Sample	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2
Weight of Asbestos as Asbestos Fines (Friable)	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-2
Asbestos as Asbestos Fines as % of Total Sample	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2



28 Duke Street Frankton 3204 Private Bag 3205 **Quote No** 126272 Hamilton 3240 New Zealand Received by: Olivia Tod Primary Contact Tiana.Hill 298786 🕓 **0508 HILL LAB** (44 555 22) **%** +64 7 858 2000 Submitted By Tiana Hill 298786 www.hill-labs.co.nz **Client Name** Aurecon New Zealand Limited 32359 Address PO Box 2292, Tauranga 3140 Sent to Date & Time: Hill Labs 07 578 6183 Phone Mobile Name: Hunnah Tick if you require COC nzenvlabs@aurecongroup.com to be emailed back Signature: H, SLLX Charge To Aurecon New Zealand Limited 32359 Received at Date & Time: Client Reference 521290 - 64 Hill Labs Name: Order No Reports will be emailed to Primary Contact by default. Results To Signature: Additional Reports will be sent as specified below. Email Client Condition Temp: Email Other and Cou, all Cock Q aureiongroupiu Room Temp Chilled Frozen Dates of testing are not routinely included in the Certificates of Analysis. Sample & Analysis details checked Please inform the laboratory if you would like this information reported. Signature: ADDITIONAL DISTRIBUTION ACCOUNTY HEAVINGS **Priority** Low Normal Urgent (ASAP, extra charge applies, please contact lab first) NOTE: The estimated turnaround time for the types and number of samples and analyses specified on this quote is by 4:30 pm, 7 working days following the day of receipt of the samples at the laboratory. Requested Reporting Date: **Quoted Sample Types** Soil (Soil), Ground Water (GW) No. Sample Date/Time Sample Type Tests Required Sample Name HMS Soil, ASD Soil PA-ET, TPHOLBXP, 1 >01 2 HMs Soil, Abb Soil DA-ET, TPBX P 3 4 5 6 7 8 9 ونوبي 10

R J Hill Laboratories Limited

Date Recv: 18-Sep-24 15:48



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Job Information Summary

Page 1 of 2

Client: Aurecon New Zealand Limited Lab No: 3674838

Contact: Tiana Hill

Tiana Hill

C/- Aurecon New Zealand Limited

Date Registered: 19-Sept-2024 9:39 am

Priority: High

PO Box 9762 Newmarket Auckland 1149

Order No: Client Reference: 521290-64

Add. Client Ref:

Quote No:

Submitted By: Tiana Hill

Charge To: Aurecon New Zealand Limited 23-Sept-2024 4:30 pm

126272

Samples

No	Sample Name	Sample Type	Containers	Tests Requested
1	BH38_1.1-1.2 18-Sept-2024	Soil	GSoil300	Heavy Metals, Screen Level, Semivolatile Organic Compounds Screening in Soil by GC-MS, TPH+ BTEX profile, Soil
2	BH14_0.6-0.7 16-Sept-2024	Soil	GSoil300	Heavy Metals, Screen Level, TPH + PAH + BTEX profile

Summary of Methods

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
Individual Tests		1	1
Environmental Solids Sample Drying	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-2
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	2
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry), gravimetry. (Free water removed before analysis, nonsoil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1-2
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	BaP Potency Equivalence calculated from; Benzo(a) anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j) fluoranthene x 0.1 + Benzo(a) pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	2
Benzo[a]pyrene Toxic Equivalence (TEF)	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	2
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-2
BTEX in Soil by Headspace GC-MS	Solvent extraction, Headspace GC-MS analysis. Tested on as received sample. In-house based on US EPA 8260 and 5021.	0.05 - 0.10 mg/kg dry wt	1-2

^{*} As the samples require analysis at a Hill Labs location that is different to where they were received, the Target Date for reporting has been extended.

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
Polycyclic Aromatic Hydrocarbons Screening in Soil	Sonication extraction, GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.010 - 0.05 mg/kg dry wt	2
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.024 - 30 mg/kg dry wt	1
Total Petroleum Hydrocarbons in Soil			•
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	20 mg/kg dry wt	1-2
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-2
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1-2
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1-2



Attachment G – Sample Registers

Table G2: Groundwater sample register

Shaft	Borehole	Sample ID	Hoovermotolo	TSS	TPH	PAH	SVOCs
Silait	Buleflute	Sample ID	Heavy metals	155	IPH	РАП	30005
SH02	BH06	BH06_01	Х	х	-	х	-
SH03	BH10	BH10_01	Х	Х	-	-	-
SH04	BH14	BH14-01	Х	х	Х	Х	-
SH05	BH17	BH17_01	Х	Х	-	-	-
SH07	BH25	BH25_01	Х	Х	-	Х	-
SH09	BH36	BH36_01	Х	Х	Х	Х	-
SH10	BH38	BH38_01	Х	Х	Х	Х	-
SH11	BH39	BH39-01	Х	Х	Х	Х	Х
SH12A	BH44	BH44_01	Х	Х	Х	Х	Х
SH12	BH46	BH46_02	Х	Х	Х	Х	Х
SH15	BH51	BH51_01	Х	х	-	-	-

Note:

- x Test requested
- Not requested

Table G1: Soil sample register

SH02	Borehole	Sample ID	Heavy Metals	TPH	PAH	BTEX	SVOC	OCP	ASB	Hold Cold
	BH06	BH06_0.1-0.2	-	-	-	-	-	-	-	Х
SH02	BH06	BH06_0.4-0.5	Х	Х	Х	-	-	-	Х	-
SH02	BH06	BH06_1.0-1.1	-	-	-	-	-	-	-	Х
SH02	BH06	BH06_1.4-1.5	Х	-	-	-	-	-	-	-
SH02	BH06	BH06_12.0-12.1	Х	-	-	-	-	-	-	-
SH02	BH06	BH06_2.5	-	-	-	-	-	-	-	Х
SH02	BH06	BH06_7.95	-	-	-	-	-	-	-	Х
SH03	BH10	BH10_0.05-0.2	-	-	-	-	-	-	-	Х
SH03	BH10	BH10_0.4-0.5	Х	Х	Х	Х	-	-	Х	-
SH03	BH10	BH10_1.0-1.1	Х	Х	х	Х	-	-	Х	-
SH03	BH10	BH10_1.4-1.5	-	-	-	-	-	-	-	х
SH03	BH10	BH10_1.8-1.9	Х	-	-	-	-	-	-	-
SH03	BH10	BH10_3.3-3.4	Х	-	-	-	-	-	-	-
SH03	BH10	BH10_5.9-6.0	Х	-	-	-	-	-	-	-
SH03	BH10	BH10_9.4-9.5	х	-	-	-	-	-	-	-
SH04	BH14	BH14_0.6-0.7	х	Х	Х	Х	-	-	Х	-
SH04	BH14	BH14_1.0-1.1	-	-	-	-	-	-	-	Х
SH04	BH14	BH14_2.5-2.6	х	_	-	-	-	-	-	-
SH04	BH14	BH14_10.0-10.1	х	_	-	_	_	-	_	_
-	BH13	BH13_0.05-0.2	-	_	_	_	_	_	_	
	BH13	BH13_0.4-0.5			 					Х
			X	Х	Х	-	-	-	Х	-
-	BH13	BH13_1.0-1.1	-	-	-	-	-	-	-	Х
-	BH13	BH13_1.4-1.5	Х	Х	Х	-	-	-	-	-
-	BH13	BH13_1.9-2.0	-	-	-	-	-	-	-	Х
-	BH13	BH13_2.4-2.5	-	-	-	-	-	-	-	Х
-	BH13	BH13_2.9-3.0	-	-	-	-	-	-	-	Х
SH05	BH17	BH17_0.05	-	-	-	-	-	-	-	Х
SH05	BH17	BH17_0.07	-	-	-	-	-	-	-	Х
SH05	BH17	BH17_1.5-1.95	х	ı	-	-	-	-	-	-
SH05	BH17	BH17_10.5-10.95	-	-	-	-	-	-	-	Х
SH05	BH17	BH17_12.0-12.22	-	-	-	-	-	-	-	Х
SH05	BH17	BH17_13.5-13.64	х	-	-	-	-	-	-	-
SH05	BH17	BH17_3.5-3.95	-	_	_	_	_	_	_	Х
SH05	BH17	BH17_5.0-5.45	_							
SH05			-		-	-	-		-	X
	BH17	BH17_6.5-6.95	-	-	-	-	-	-	-	Х
SH05	BH17	BH17_7.5-7.95	Х	-	-	-	-	-	-	-
SH05	BH17	BH17_9.0-9.33	-	-	-	-	-	-	-	Х
SH06	BH21	BH21_11.0-11.1	Х	-	-	-	-	-	-	-
SH06	BH21	BH21_16.4-16.5	Х	-	-	-	-	-	-	-
SH06	BH21	BH21_5.4-5.5	Х	-	-	-	-	-	-	-
SH06	BH21	BH21_6.6-6.7	-	-	-	-	-	-	-	х
-	BH22	BH22_0.2-0.3	Х	-	-	-	-	-	-	-
-	BH22	BH22_0.6	х	-	-	-	-	-	-	-
SH07	BH24	BH24_0.05-0.2	-	-	_	_	-	-	-	х
SH07	BH24	BH24_0.3-0.4	_		_	_	-	_	_	х
SH07	BH24	BH24_0.5-0.6	_	_	_	_	_	-	_	X
SH07	BH24	BH24_1.0-1.1	_	_	-	_	-	-	_	X
SH07	BH25	BH25_0.05-0.15								
SH07	BH25		-	-	-	-	-	-	-	Х
		BH25_0.2-0.3	Х	Х	Х	-	-	-	Х	-
SH07	BH25	BH25_1.0-1.2	-	-	-	-	-	-	-	Х
SH07	BH25	BH25_1.5-1.6	X	-	-	-	-	-	-	-
SH07	BH25	BH25_16.5-16.6	Х	-	-	-	-	-	-	-
-	BH29	BH29_0.05-0.2	Х	-	-	-	-	-	Х	-
-	BH30	BH30_0.23	х	•	Х	-	-	Х	Х	-
-	BH30	BH30_0.62	х	-	х	-	-	-	Х	-
SH09	BH35	BH35_3.4-3.5	х	Х	Х	-	-	-	-	-
SH09	BH35	BH35_4.0-4.1	х	-	-	-	-	-	-	-
SH09	BH35	BH35_5.3-5.4	-	-	-	-	-	-	-	Х
SH09	BH35	BH35_7.4-7.5	-	-	-	-	-	-	-	X
SH09	BH36	BH36_0.6-0.7	х	Х	х	-	-	-	Х	-
SH09	BH36	BH36_1.3-1.5	-	-	-	-	-	-	-	Х
SH09	BH36	BH36_2.5-2.6	х	-	-	_	_	_	_	_
SH09	BH36	BH36_5.45	_	-	-	-	-	-	-	-
	BH38		X							
SH10		BH38_0.5-0.6	-	-	-	-	-	-	-	Х
SH10	BH38	BH38_1.1-1.2	Х	Х	-	Х	Х	-	Х	-
SH10	BH38	BH38_1.5-1.6	-	-	-	-	-	-	-	Х
SH10	BH38	BH38_6.7-7.0	Х	-	-	-	-	-	-	-
SH11	BH39	BH39_0.2-0.3	-	-	-	-	-	-	-	Х
SH11	BH39	BH39_0.5-0.6	Х	Х	Х	Х	-	-	Х	-
SH11	BH39	BH39_1.0-1.1	-				_			Х
SH11	BH39	BH39_1.5-1.6	х	-	-	-	-	-	-	-
SH11	BH39	BH39_1.9-2.0	-	-	-	-	-	-	-	Х
SH11	BH39	BH39_10.5-10.95	-	-	-	-	-	-	-	X
SH11	BH39	BH39_12.0-12.45	х	_	-	_	_	_	_	-
SH11	BH39	BH39_3.0-3.45	x		-	_	-	-	_	-
SH11 SH11		BH39_4.5-4.95								
2LIT	BH39		-	-	-	-	-	-	-	Х
	BH39	BH39_6.0-6.45	Х	-	-	-	-	-	-	-
SH11		BH39_7.5-7.95	-	-	-	-	-	-	-	Х
SH11 SH11	BH39									
SH11 SH11 SH11	BH39	BH39_9.0-9.45	х	-	-	-	-	-	-	-
SH11 SH11 SH11 SH12A		BH39_9.0-9.45 BH43_0.5-0.6	x x	- X	- X	-	-	-	- X	-
SH11 SH11	BH39	BH39_9.0-9.45								

Note:

x Test requested

Not requested

Shaft	Borehole	Sample ID	Heavy Metals	TPH	PAH	BTEX	svoc	OCP	ASB	Hold Cold
SH12A	BH44	BH44_0.3-0.4	х	Х	х	-	-	-	Х	-
SH12A	BH44	BH44_0.5-0.6	-	-	-	-	-	-	-	х
SH12A	BH44	BH44_0.8-0.9	-	-	-	-	-	-	-	х
SH12A	BH44	BH44_1.1-1.2	х	Х	Х	-	-	-	Х	-
SH12A	BH44	BH44_1.4-1.5	-	-	-	-	-	-	-	х
SH12A	BH44	BH44_10.5-10.6	х	-	-	-	-	-	-	-
SH12A	BH44	BH44_2.0-2.4	-	-	-	-	-	-	-	х
SH12A	BH44	BH44_3.0-3.4	х	Х	х	-	-	-	Х	-
SH12A	BH44	BH44_6.0-6.3	х	-	-	-	-	-	-	-
SH12	BH45	BH45_0.05-0.2	-	-	-	-	-	-	-	х
SH12	BH45	BH45_0.3-0.4	-	-	-	-	-	-	-	х
SH12	BH45	BH45_0.8-1.0	х	Х	х	-	-	-	Х	-
SH12	BH45	BH45_1.4-1.6	-	-	-	-	-	-	-	х
SH12	BH45	BH45_4.3-4.5	-	-	-	-	-	-	-	х
SH12	BH45	BH45_6.2-6.45	-	-	-	-	-	-	-	х
SH12	BH46	BH46_0.05-0.2	-	-	-	-	-	-	-	х
SH12	BH46	BH46_0.4-0.5	х	Х	х	-	-	-	Х	-
SH12	BH46	BH46_1.0-1.1	-	-	-	-	-	-	-	х
SH12	BH46	BH46_1.4-1.6	х	Х	х	-	-	-	Х	-
SH12	BH46	BH46_10.5-10.6	-	-	-	-	-	-	-	х
SH12	BH46	BH46_12.0-12.1	х	-	-	-	-	-	-	-
SH12	BH46	BH46_3.5-3.6	х	Х	х	-	-	-	Х	-
SH12	BH46	BH46_7.5-7.8	-	-	-	-	-	-	-	х
SH12	BH46	BH46_8.5-8.7	х	-	-	-	-	-	-	-
SH12	BH46	BH46_9.0-9.3	-	-	-	-	-	-	-	х
SH13	BH48	BH48_0.05-0.2	х	-	-	-	-	-	Х	-
SH13	BH48	BH48_3.0-3.1	х	-	-	-	-	-	-	-
SH13	BH48	BH48_6.5-6.7	х	-	-	-	-	-	-	-
SH14	BH49	BH49_0.05-0.2	х	Х	х	Х	-	-	Х	-
SH14	BH49	BH49_0.3-0.4	х	Х	Х	Х	-	-	Х	-
SH14	BH49	BH49_0.5-0.6	-	-	-	-	-	-	-	х
SH14	BH49	BH49_1.0-1.1	-	-	-	-	-	-	-	х
SH14	BH49	BH49_1.4-1.5	-	-	-	-	-	-	-	х
SH14	BH49	BH49_2.7-2.8	х	-	-	-	-	-	-	-
SH14	BH49	BH49_5.0-5.1	х	-	-	-	-	-	-	-
SH14	BH49	BH49_5.9-6.0	х	-	-	-	-	-	-	-
SH14	BH49	BH49_8.0-8.1	-	-	-	-	-	-	-	х
SH14	BH49	BH49_B1	-	-	-	-	-	-	Х	-
SH15	BH51	BH51_0.05-0.2	-	-	-	-	-	-	-	х
SH15	BH51	BH51_0.5-0.6	х	Х	х	-	-	-	Х	-
SH15	BH51	BH51_12-12.33	Х	-	-	-	-	-	-	-
SH15	BH51	BH51_2.0-2.45	Х	Х	-	-	-	-	-	-
SH15	BH51	BH51_3.0-3.2	-	-	-	-	-	-	-	х
SH15	BH51	BH51_3.5-3.95	-	-	-	-	-	-	-	х
SH15	BH51	BH51_5.0-5.45	х	-	-	-	-	-	-	-
SH15	BH51	BH51_6.5-6.95	-	-	-	-	-	-	-	х
SH15	BH51	BH51_8.0-8.45	х	-	-	-	-	-	-	-
SH15	BH51	BH51_9.0-9.45	-	-	-	-	-	-	-	х



Attachment H– Laboratory Results and Screened results tables



		Т	Metals		Т	98	_	_	Asbestos			Т	П		Т		ES		Polycycli	c Aromatic Hyd	drocarbons	Т		Т			$\overline{}$		-		PH	$\overline{}$
						m Ple	101	98 % of		8.5							PEF)		_			8			9							ı l
		;	ş			Asbestos Total San	as %	A A		stos T	alene	alene				e goene		TEF)	thene	ylene	uthe	hracei			d) pyre				total)			ı l
			<u> </u>			stos as As as % of To	as F. A. Fi	ed FA 1	e de la	Asbet	t de	l the	hene	hylen	2	nthra yren	pyrene Pot	oyren	yren	ed(i,	luora	h)ang	9 2		2,3-c,		rene		5 E			
	anic	, E	per per			estos as %	estos estos iple	al San	stos I	octed d	ethylu	ethylu	apht	de l	hrace	(e) (a)	zo[a]	ivaler zo[b]	[(e)oz	(g) (g, l	Z o(k)/	enz(a,	vanth	y ene	ano (1,	ylene	l and	e .	ng) qs	54	98	88
	ĕ ≪ ma/ka	mo/ka m	S S	를 를 mg/kg mg/kg	N malka	% w/w	% w/w	<u> </u>	ww ·	- g	₹ mg/kg	Ę mg/kg	mg/kg	wg/kg n	₹ mo/ko m	කි කි ng/kg mg/kg	க் பி mg/kg dry wmg/	ka dry wmalka	dry w mg/kg	ma/ka	කි පි mg/kg mg	ka ma/ka	E ma/ka	.≅ ma/ka	를 불 mg/kg mg/kg	ma/ka	E ma/ka	ma/ka m	₹ 5 ng/kg mg/k	5 ma/ka	ma/ka	mg/kg
NESCS and NEPM (for Ni, Zn only) - Commercial / Industri	rial A+B 70	1,300 ^{#1} 6,3	300 ^{#2} 10,000 ^{#3}	3,300 ^{#4} 6,000	400,000	-	-			-	- Illg/kg	- Ingreg	-	- IIIg/kg II	- III		35 ^{#5}		ury w iliging	-		ng Iliging	-	-		- Iliging	-	-		- Illg/kg	- Ilig/kg	-
Auckland Unitary Plan - Chapter E30 - Permitted Activity Crit Auckland Unitary Plan - Chapter E30 - Background - Volcanic S	teria. 100 Soils. 12	7.5 40 0.65 12	00° 325 25 ^{#10} 90	250 105 65 ^{#11} 320	1,160	-	-	-			-	-	-	-	-	- 20°°	-			-		-	-	-		-		-		+ -	-	-
Class 3 Managed Fill Waste Acceptance Cri	riteria ^E 140	10 1				-	-	-			-	-	-			125 -	-			-		-				-	-	-	- 200	600		-
Module 4, Tier 1 Maintenance Workers (SI Module 4, Tier 1 GW 2m (CLAY) >=0m,	<1m G				-	-	-	-			-			-		- 25 ⁻¹				-		-	-		- 640 - 0.043			1.2	- 120 - 590	6,500 113 1,400 ^{#13}		-
Module 4, Tier 1 GW 2m (SANDY SILT) >=0m,	<1m G -	-			1	-	-	0.001 0		-	-	-	-	-	-	- 5.7	-		-	-		-	-	-	- 0.28	-		7.9	- 5,200 [±]	9,200#13	-	-
Lab Report No. Field ID + Depth (m) Location Characterising Matrix Type Matrix Description Sample date	330101 -							0.001																								
3664138 + 3658961 BH06_0.4-0.5 Suffolk Reserve Shaft SH02 Soil SILT (Fill) 29 08 20:	24 5	<0.10	22 26	89 22	68	<0.001	< 0.001	<0.001 <0	.001 -	Not Detected	<0.014	< 0.014	<0.014	0.040	0.057 0	0.22 0.35	0.49	0.49 0.3	36 0.199	0.27	0.141 0.2	0.041	0.44	<0.014	0.27 <0.07	0.092	0.129	0.51	3.4 <20	<20	<40	<80
3664138 BH06 1.4-1.5 Suffolk Reserve Shaft SH02 Soil SILT (Natural) 29 08 20: 3620390 + 3621286 BH10 0.4-0.5 Mostyn Street Shaft SH03 Soil SILT (Fill) 04 07 20:	124 5	0.15	23 31	56 26	90	<0.001	<0.001	<0.001 <0	.001 -	Not Detected	<0.013	<0.013	<0.013	0.028 (0.167 0.25	0.35	0.35 0.2	25 0.149	0.179	0.100 0.1	69 0.032	0.40	0.013		0.062		0.48	2.7 <20	<20	<40	<80
3620390 + 3621286 BH10 1.0-1.1 Mostyn Street Shaft SH03 Soil SILT (FIII) 04 07 20. 3624078 BH10_1.8-1.9 Mostyn Street Shaft SH03 Soil Sandy SILT (Natural) 05 07 20.	124 3	U.11 <0.10	21 14 18 14	42 12 34 15	98 58	<0.001	<0.001	<0.001 <0	.001 -	Not Detected	<0.014	<0.014	<0.014	0.01/ (0.031 0	0.181 0.25	U.37 -	U.30 0.2	28 0.146	0.175	0.108 0.1	79 0.032	0.45	<0.014	0.169 <0.07	0.062	0.176	0.44	<u>L.1</u> <20	<20	<40	<80
3624078 BH10 3.3-3.4 Mostyn Street Shaft SH03 Soil Clayey SLT (Natural) 56 97 20: 3624078 BH10 5.9-6.0 Mostyn Street Shaft SH03 Soil Clayey SLT (Natural) 56 97 20: 3624078 BH10 9.4-9.5 Mostyn Street Shaft SH03 Soil Sandstoner (Natural) 56 97 20: 3624078 BH10 9.4-9.5 Mostyn Street Shaft SH03 Soil Sandstoner (Natural) 56 97 20:	24 <2	<0.10 <0.10	11 11 24 16	28 9 9.2 14	56 30	-				-	-	-		-	-							-	-	-		-		-	- -	+=	-	
3626399 + 3625593 BH13_0.4-0.5 New Bond Street - Soil Silty CLAY (Fill) 10 07 203	124 5	<0.10 <0.10	20 15 40 36	7.2 20 187 35	50 85	<0.001	<0.001	<0.001 <0	.001 -	Not Detected	<0.014	<0.03	<0.014	0.024 (0.016 0	0.128 0.190	0.28	0.27 0.2	22 0.112	0.145	0.077 0.1	- 04 0.027	0.22	<0.014	0.142 <0.07	0.042	0.059	0.25	1.8 <20	<20	<40	<80
3625593 BH13_1.4-1.5 New Bond Street - Soil Silty CLAY (Natural) 10 07 20: 3634409 BH21_11.0-11.1 Finch Street Shaft SH06 Soil Sandstone (Natural) 22 07 20:	124 3	<0.10	24 9 12 10	6.8 5 4.3 11	14 43	+ :	-	-		-	<0.015	<0.03	<0.015	<0.015 <	<0.015 <	0.015 <0.015	<0.036	0.036 <0.0	015 <0.015	<0.015	<0.015 <0.0	0.015	<0.015	<0.015	<0.015 <0.08	<0.015	<0.015	<0.015	:0.4 <30	<20	<40	<90
3634409 BH21_16.4-16.5 Finch Street Shaft SH06 Soil Sandstone (Natural) 22 07 20. 3634409 BH21_5.4-5.5 Finch Street Shaft SH06 Soil Silty SAND (Natural) 22 07 20.	124 3	<0.10	13 11 8 14	5.1 10 6.6 9	40 10	-	-	-		- :	-	-	-	-	-		-		-	-		-	-	-		-		-		-	-	
3590857 BH22 0.2-0.3 Finch Street - Soil Sandy SILT (Fill) 22 05 20: 3590857 BH22 0.6 Finch Street - Soil CLAY (Fill) 22 05 20:	124 6	0.10 <0.10	28 23 9 3	199 55 11.6 6	74	- :		-		-	-	-	-	-	-	: :	-		-	-		-	-	-	: :	-	=	-		==	-	\equiv
3658963 + 3658961 BH25 0.2-0.3 Myrtle Street Shaft SH07 Soil Sandy SILT (Fill) 26 08 20: 3658963 BH25 1.5-1.6 Myrtle Street Shaft SH07 Soil CLAY (Natural) 26 08 20: 40.00 Shaft SH07 Soil CLAY (Natural) 26 08 20: 40.00 Shaft SH07 Shaft Shaft SH07 Shaft SH07 Shaft	124 3	<0.10	26 30	21 48	35	<0.001	<0.001	<0.001 <0	.001 -	Not Detected	0.030	0.019	0.195	0.025	0.85	1.73 1.78	2.6	2.6 1.8	81 0.97	1.06	0.71 1.5	9 0.23	3.7	0.23	1.10 <0.08	0.41	2.8	4.0	23 <30	<20	141	143
3620390 + 3621286 BH29 0.05-0.2 736 Great North Road - Soil SILT (Fill) 04 07 203	124 12	0.32	43 52	69 80	132	<0.001	<0.001	<0.001 <0	001 -	Not Detected	-0.044	-0.00	-0.011	-0.044	-	0.110 0.26	-	0.35 0.2	23 0.135	- 0.404		02 0.030	-	-0.044	0.155 < 0.07		0.020	- 0.470	1.6	==	-	
3582989 + 3583099 BH30 0.62 Western Springs Park - Soil CLAY (Fill) 13 05 20	24 <2	<0.10	20 20 20	8.1 9	20	<0.001	<0.001	<0.001 <0	.001 -	Not Detected Not Detected	<0.014	<0.03	<0.014	<0.014 <	<0.014 0	0.015 <0.015	0.35 <0.035	0.35 0.2 0.035 <0.0	23 0.135	0.164 <0.015	<0.015 <0.0	02 0.030	<0.015	<0.014	<0.015 <0.08	0.063 <0.015	<0.015	0.170 <0.015	<0.4	-	-	-
3634409 BH35_4.0-4.1 Ophir Street Shaft SH09 Soil Clayey SILT (Natural) 22 07 20:	124 11	<0.10	9 21	5.9 64	15	-	-	-		-	<0.016	<0.016	<0.016	<0.016 <	<u.u16 <i<="" th=""><th>0.016 <0.016</th><th><0.039</th><th>10.039 <0.0</th><th>U16 <u.u16< th=""><th><0.016</th><th><0.016 <0.0</th><th>116 <0.016</th><th><0.016</th><th><0.016</th><th><0.016 <0.08</th><th><0.016</th><th><0.016</th><th><0.016 *</th><th>.0.4 <30</th><th><20</th><th><40</th><th><90</th></u.u16<></th></u.u16>	0.016 <0.016	<0.039	10.039 <0.0	U16 <u.u16< th=""><th><0.016</th><th><0.016 <0.0</th><th>116 <0.016</th><th><0.016</th><th><0.016</th><th><0.016 <0.08</th><th><0.016</th><th><0.016</th><th><0.016 *</th><th>.0.4 <30</th><th><20</th><th><40</th><th><90</th></u.u16<>	<0.016	<0.016 <0.0	116 <0.016	<0.016	<0.016	<0.016 <0.08	<0.016	<0.016	<0.016 *	.0.4 <30	<20	<40	<90
3629193 - 3629428 BH39 0.5-9.6 Burgoyne Street Shaft SH11 Soil Silty CLAY (Fill) 16 07 20. 3629193 BH39 1.0-1.1 Burgoyne Street Shaft SH11 Soil Silty CLAY (Fill) 16 07 20. 3629193 BH39 1.5-1.6 Burgoyne Street Shaft SH11 Soil CLAY (Natural) 16 07 20.	24 70 124 4	<0.10	12 10	54 9	21	<0.001	<0.001	<0.001 <0	.001 -	Not Detected	<0.013	<0.013	<0.013	<0.013 <	<0.013 <	0.013 <0.013	<0.030	0.030 <0.0	013 <0.013	<0.013	<0.013 <0.0	0.013	<0.013	<0.013	<0.013 <0.07	<0.013	<0.013	<0.013 <	.0.3 <20	<20	<40	<80
3634409 BH39 12.0-12.45 Burgoyne Street Shaft SH11 Soil Siltstone (Natural) 22 07 207	124 5	<0.10	22 21 22 25	7.7 18	10	-	-	-		-	-	-	-	-	-		-		-	-		-	-	-		-		-		+ :	-	-
3634409 BH39 3.0-3.45 Burgoyne Street Shaft SH11 Soil CLAY (Natural) 22 07 20. 3634409 BH39 6.0-6.45 Burgoyne Street Shaft SH11 Soil Siltstone (Natural) 22 07 20.	124 4	<0.10	15 33 20 30	10.9 5 8.2 57	21 47	-	-	-		-	-	-	-	-	-		-		-	-		-	-	-		-		-			-	-
3634409 BH39 9.0-9.45 Burgoyne Street Shaft SH11 Soil Siltstone (Natural) 22 07 20: 3651482 + 3651494 BH44_0.3-0.4 Basque Park Shaft SH12A Soil Clayey SiLT (Landfill) 14 08 20:	124 5 124 3	<0.10	16 31 15 16	8.8 20 54 14	69 61	<0.001	<0.001	<0.001 <0	.001 -	Not Detected	<0.013	<0.013	<0.013	<0.013 <	- <0.013 0	0.050 0.073	0.105	0.104 0.0	79 0.042	0.053	0.027 0.0	- 46 <0.013	0.107	<0.013	0.052 <0.07	0.017	0.034	0.118	0.7 <20	<20	<40	<80
3651482 + 3651494 BH44 1.1-1.2 Basque Park Shaft SH12A Soil Clavey SILT (Landfill) 14 08 20	124 4	<0.10	22 22 27 16	45 18 5.4 14	47 45	<0.001	<0.001	<0.001 <0	.001 -	Not Detected	<0.016	<0.016	<0.016	<0.016 <	<0.016 0		0.138	0.137 0.1		0.065	0.036 0.0	70 <0.016	0.168	<0.016	0.063 <0.08	0.023	0.088	0.168	1.1 <30	<20	<40	<90
3651482 + 3651494 BH44 3.0-3.4 Basque Park Shaft SH12A Soil Clayey SILT (Landfill) 15 08 203	24 <2	<0.10	18 6 24 11	15.3 5	41	<0.001	<0.001	<0.001 <0	.001 -	Not Detected	<0.013	<0.013	<0.013	<0.013 <	<0.013 0	0.014 0.024	0.031	0.030 0.0	27 0.014	0.018	<0.013 0.0	15 <0.013	0.039	<0.013	0.017 <0.07	<0.013	0.017	0.038	:0.3 <20	<20	<40	<80
3655466 + 3655467 RH45 0 8-1 0 Rasque Park Shaft SH12 Soil Clavey SILT (Landfill) 19 08 201	24 5	0.10	22 26	47 18	80	<0.001	<0.001	<0.001 <0	.001 -	Not Detected Not Detected	<0.013	<0.013	<0.013	0.027 0	0.023 0	0.147 0.125	0.22	0.21 0.2	21 0.20	0.165	0.080 0.1	40 0.028	0.36	<0.013	0.154 < 0.07	0.053	0.093	0.38	2.2 <20	<20	<40	<80
3655466 + 3655467 BH46_1.4-1.6 Basque Park Shaft SH12 Soil Clayey SILT (Landfill) 19 08 203	124 3	<0.10	20 16	16.7 12	43	<0.001	<0.001	<0.001 <0	.001 -	Not Detected	<0.013	<0.013	<0.013	<0.013	<0.013 0	0.016 0.013	<0.030	0.030 0.0	24 0.021	0.018	<0.013 0.0	15 <0.013	0.047	<0.013	0.016 <0.07	<0.013	0.013	0.047	<0.3 <20	<20	<40	<80
3658963 + 3670623 BH46_3.5-3.6 Basque Park Shaft SH12 Soil Sandy SILT (Landfill) 23 08 203	24 5	<0.10	24 22	75 18	65	<0.001	<0.001	<0.001 <0	.001 -	Not Detected	<0.013	<0.013	<0.013	0.121	0.25 (0.76 0.77	1.12	1.11 0.8	80 0.43	0.46	0.32 0.6	66 0.098	1.79	0.050	0.46 <0.07	0.172	0.76	1.75	9.7 <20	<20	<40	<80
3620390 + 3621286 BH48_0.05-0.2 Copper Street Shaft SH13 Soil SILT (Fill) 04 07 20:	124 6	0.44	19 35	900 18	310	<0.001	<0.001	<0.001 <0	.001 -	Not Detected	-	-		-	-					1:		-		-		-		-	===	#=	-	
3634409 BH48_6.5-6.7 Copper Street Shaft SH13 Soil Sandstone (Natural) 22 07 203	124 3	<0.10 <0.10	16 15 25 15	5.3 24 5.0 25	68 59		-			-	1:	1										-		-		1	=	-	#	#=		
3624327 BH49 0.50-0.2 Arch Hill Reserve Shaft SH14 Soil SLT (Fill) 08 07 20: 3624327 BH49 0.30-0.4 Arch Hill Reserve Shaft SH14 Soil SLT (Fill) 08 07 20: 3624329 BH49 2.7-2.8 Arch Hill Reserve Shaft SH14 Soil SILT (Fill) 08 07 20: 3624329 BH49 2.7-2.8 Arch Hill Reserve Shaft SH14 Soil SltD (CLAY (Natural)) 22 72:	124 5	0.18 0.14	24 40 18 28	99 50 98 23	120 112	<0.001 <0.001	<0.001 <0.001	<0.001 <0	.001 -	Not Detected Not Detected	<0.014	<0.014	0.020 0.014	0.142 0.028 (0.21 1	1.18 1.69 0.34 0.43	2.4 0.63	2.4 1.7 0.62 0.4	78 1.02 45 0.25	1.22 0.33	0.70 1.1 0.171 0.3	1 0.22 19 0.057	2.3 0.78	0.031 0.013	1.19 <0.07 0.28 <0.07	0.43 0.101	0.69		16.8 <20 4.9 <20	<20	110 <40	142 <80
3634409 BH49 5.0-5.1 Arch Hill Reserve Shaft SH14 Soil CLAY (Natural) 22 07 203	124 <2	<0.10	19 12 19 18	4.8 3 6.6 <2	21 5	+ -	-	-		-	-	+ :	-	-	-		-			-		-	-	-		-		-	- -		-	
3634409 BH49 5.9-6.0 Arch Hill Reserve Shaft SH14 Soil Sandstone (Natural) 22 07 20: 3624326 BH49 B1 0.35 Arch Hill Reserve Shaft SH14 Bulk Fibre Board 08 07 20:		<0.10	20 13	4.4 12	36	-	-	-	- Fibre Boar	rd Amosite (Brown), Chrysotile (White)	-	-	-	-	-		-		-	-		-	-	-		-	\rightarrow	-		-	-	
3651482 + 3651494 BH51 0.5-0.6 Arch Hill Reserve Shaft SH15 Soil SILT (Fill) 15 08 20: 3655466 BH51 12.0-12.33 Arch Hill Reserve Shaft SH15 Soil Sandstone (Natural) 15 08 20:	124 4	<0.10	27 34 23 20	62 48 5.8 17	65 49	<0.001	<0.001	<0.001 <0	.001 -	Not Detected	<0.013	<0.013	<0.013	<0.013 <	<0.013 0	0.066	0.100	0.099 0.0	0.038	0.043	0.032 0.0	50 <0.013	0.103	<0.013	0.051 <0.07	0.024	0.017	0.110	0.7 <20	<20	<40	<80
3651482 BH51 2.0-2.45 Arch Hill Reserve Shaft SH15 Soil CLAY (Natural) 15 08 203	124 3	<0.10	20 8	9.8 10	44	-	-	-		-	<0.016	<0.016	<0.016	<0.016 <	<0.016 <	0.016 <0.016	<0.039	0.038 <0.0	016 <0.016	<0.016	<0.016 <0.0	016 <0.016	<0.016	<0.016	<0.016 <0.08	<0.016	<0.016	<0.016	:0.4 <30	<20	<40	<90
3655466 BH51 8.0-8.45 Arch Hill Reserve Shaft SH15 Soil SAND (Natural) 15 08 203	124 <2	<0.10	23 21	8.4 21	52	-	-			-	-		-	-	-					-		-	-	-		-	===	-		==	-	
3670643 BH17 1.5-1.95 52 Kingsland Ave Shaft SH05 Soil Silty CLAY (Natural) 05 09 203	124 <	<0.10	9 3	6.3 33 7.3 2	7	1				-	-	-		-	-	: :				1:		-	1		: :	-		-	##	#	-	二
3670643 BH17 7.5-79.5 52 Kingsland Ave Shaft SH05 Soil Sittstone (Natural) 65.99.20 3670643 BH17 13.5-13.64 52 Kingsland Ave Shaft SH05 Soil Sittstone (Natural) 65.99.20 3670643 BH25 16.5-16.6 Myrtle Street Shaft SH07 Soil Sandstone (Natural) 12.99.20	124 <2	<0.10	26 16	5.2 22	40	-				-	-	-	-	-	-					1		-		-		-		-	===	+=	-	
3670643 + 3670623 BH36_0.6-0.7 Ophir Street Shaft SH09 Soil Silty CLAY (Fill) 12 09 203	124 3 124 <2	<0.10	10 11	4.7 11 6.5 4 6.3 <2	36 5	<0.001	<0.001	<0.001 <0	.001 -	Not Detected	<0.015	<0.015	<0.015	<0.015 <	<0.015 <	0.015 <0.015	<0.036	0.036 <0.0	015 <0.015	<0.015	<0.015 <0.0	0.015	<0.015	<0.015	<0.015 <0.08	<0.015	<0.015	<0.015	<0.4 <30	<20	<40	<90
3683703 BH36 5.45 Ophir Street Shaft SH09 Soil SILT (Natural) 12 09 20:	124 5	<0.10	15 9 10 34	6.3 <2 10.6 20	123		-	-		-	-	-	-	-	:		-			-		-	-	-		-	=	-		+:	-	
3683703 BH43_2.3 Fleet Street Shaft SH12A Soil SILT (Fill) 24 09 203	24 <2	<0.10 <0.10	16 17 35 23	92 9 17.2 14		<0.001	<0.001	<0.001 <0	.001 -	Not Detected	0.020	<0.013	0.057	0.54	1.13	3.0 3.4	4.9	4.9 3.	5 1.80	2.3	1.27 2.	5 0.42	7.8	0.42	2.2 <0.07	0.81	6.2	7.8	45 <20	<20	177	179
3674838 + 3674826 BH14_0.6-0.7 Nixon Park Carpark Shaft SH04 Soil CLAY (Fill) 16 09 20: 3683703 BH14_2.5-2.6 Nixon Park Carpark Shaft SH04 Soil SILT (Natural) 30 09 20:	124 8 124 <2	<0.10 <0.10	23 18 7 2	114 24 3.7 <2	46 5	<0.001	<0.001	<0.001 <0	.001 -	Not Detected	<0.014	<0.014	<0.014	0.019 0	0.026 0	0.175 0.25	0.36	0.35 0.2	23 0.134	0.180	0.102 0.1	64 0.033	0.33	<0.014	0.168 <0.07	0.063	0.110	0.41	2.4 <20	<40	<80	<20
3674839 + 3574826 BH14 0,6-0.7 Nixon Park Carpark Shaft SH04 Soil CLAY (Fill) 69 920.	24 2	<0.10	20 10 7 4	3.9 10 16.9 2	42 10	<0.001	<0.001	<0.001 <0	.001 -	Not Detected	-	<0.5	<0.5	<0.5	<0.5	<0.5 <0.5	<1.3	<1.3 <1	1.5	<0.5	<0.5 <0	.5 <0.5	<0.5	<0.5	<0.5 <0.5	-	<0.5	<0.5		- J <40	<80	<20
3694107 BH38_6.9-7.0 Gundry Street Shaft SH10 Soil Siltstone (Natural) 15 10 20		<0.10	18 27	8.1 18	64	-	-	-		-	-	-	-	-	-		-			-		-	-	-		-		-			-	-

#I Default value is for pH of S. Concentrations increase with increasing pH (see methodology).
#I Default value is for pH of S. Concentrations increase with increasing pH (see methodology).
#I Value for hexavalent chromium
#I Value is for increase increas

#13 Residual Separate Phase Hydrocarbons (RSPH)

Environmental Standards

A - Ministy for the Environment, 2012, NESCS - Commercial / Industrial

B - NEPC, 2013, NEPM (N. Zh. only) - Commercial / Industrial

C - Auckland Council, 2016, Auckland Unitary Plan - Chapter E30 - Permitted Activity Criteria.

D - Auckland Council, 2016, Auckland Unitary Plan - Chapter E30 - Backpround - Volcanic Soils.

E - wastelMINZ, Seedmeber 2023, Class 3 Managed III Missek Acceptance Criteria

F - Ministy for the Environment, August 1999, Module 4, Tier 1 Maintenance worker (SAND)

G - Ministy for the Environment, August 1999, Module 4, Tier 1 GW 2m (CLAY)(SANDY SILT)

H - BRANZ, 2017, NZ GAMAS (Asbestos) Commerical/ industrial



			RTFY										Organochlorine P	esticides													SVI	OCs.				
			9	kp)				ane)	cis)				O ganconic in C				_	sulphate	90	yde	5	poxide	aphthalene	xyl)adipate	ne ,		nyl phenyl ether	nyl phenyl ether	loi	ethoxy) methane	ethyl)ether	Isopropyl) ether
	3enzen e	oluene	Shylbenzer	ylene (o)	Mdrin	2 H	2 8 2	-BHC (Linc	Chlordane (000	QQQ-d'	,,p*-DDE	,4-DDE	,4-DDT	indosulfan	Deldrin	indo sulfan indrin	in do su lfan	indrin keto	Endrin alde	leptachlor Aethoxychl	leptachlor	&2-Chloron)(2-ethylhe)iphenylam Sarbazole	sophorone	Lbromophe	- - - - - - - - - - - - - - - - - - -	3enzyl alco	3is(2-chlore	3is(2-chloro	3ls(2-chlore
NESCS and NEPM (for Ni, Zn only) - Co	mg/kg	mg/kg	mg/kg mg	g/kg mg/kg	mg/kg mg	/kg mg/kg	mg/kg	mg/kg	mg/kg mg/	kg mg/kg	mg/kg	mg/kg	mg/kg mg/kg	mg/kg	mg/kg	mg/kg	mg/kg mg/kg	mg/kg	mg/kg	mg/kg	mg/kg mg/kg	mg/kg	mg/kg dry w	mg/kg mg/k	dry w mg/kg	g mg/kg	mg/kg	mg/kg	mg/kg	mg/kg m	ng/kg m	g/kg m
Auckland Unitary Plan - Chapter E30 - Per	ermitt -	-	-		-		-	-		-	-	-	- 12 ^{±7}	-	-	-			-	-		-	-	-		-	-	-	-	-	-	
Auckland Unitary Plan - Chapter E30 - Backg Class 3 Managed Fill Wa		19	10 26	5 ^{#12} 25 ^{#12}			-	-		-	-	-	. 2*7	<u> </u>	1	0.1	: :	-	-			-				-		-	-			
Module 4, Tier 1 Mainte Module 4, Tier 1 GW 2	enan 3	94	670 15	0#12 150#12			-	-		-	-	-		-	-	-		-	-	-		-	-	-		-	-	-	-	-	-	
Module 4, Tier 1 GW 2m Module 4, Tier 1 GW 2m (SA)	2m (0.0054 NDY 0.029	6	7.2 3	3.7 3.7			-	-		-	-	-		-	-	-		-	-	-		-	-	-		-	-	-	-			
NZ GAMAS (Asbestos) Co			-				-	-		-	-	-			-	-		-	-	-		-	-	-		-	-	-	-	-	-	
Lab Report No. Field ID + Depth (m) Location Characterising Matrix Type Matrix Description 3664138 + 3659961 BH06_0.4-0.5 Suffolk Reserve Shaft SH02 Soil SILT (Fill)											_																					
3664138 RH06 1.4.1.5 Suffolk Paganya Shaft SH02 Soil SILT (Natural)	-		-				-	-		-	-	-		-	-	-		1	-	-		-	-	-		-	-	-	-	-	-	-
3620390 + 3621286 BH10 1.0-1.1 Mostyn Street Shaft SH03 Soil SILT (Fill)	<0.06	<0.06	<0.06 <0	1.06 <0.11 1.07 <0.13			-				-	-		-	-	-			-	-		-	-	-		-	-	-	-	-	-	-
3624078 BH10 3.3-3.4 Mostyn Street Shaft SH03 Soil Clavey SILT (Natura	ral) -	+ - +	-		-			-		+ :	-	-		-	-	-		+ -	1 : 1	-		-	-	-		-	-	-	-	-	-	
3624078 BH10_5.9-6.0 Mostyn Street Shaft SH03 Soil Clayey SILT (Natura 3624078 BH10_9.4-9.5 Mostyn Street Shaft SH03 Soil Sandstone (Natura 3624078 Shaft SH03 Soil Shaft SH03 Soil Sandstone (Natura 3624078 Shaft SH03 Soil Shaft SH03 Shaft Shaft SH03 Shaft Shaft SH03 Shaft Shaft SH03 Shaft	ral) - al) -		-		-		-	-		-	-	-		-	-	-	- -	-		-		-	-	-		-	-	-	-	-	-	-
3626399 + 3625593 BH13 0.4-0.5 New Bond Street - Soil Silty CLAY (Fill) 3625593 BH13 1.4-1.5 New Bond Street - Soil Silty CLAY (Natura	al) -	- :	-		- :		- :	-:-		- :	-	-	: :	-	- : -	-	: :	-:	- : -	-		-	-	-:-		- :	-	-		-	-	-
3634409 BH21 11.0-11.1 Finch Street Shaft SH06 Soil Sandstone (Natural 3634409 BH21 16.4-16.5 Finch Street Shaft SH06 Soil Sandstone (Natural 3634409	al) -	-	-		-		-	-		-	-	-		-	-	-	- -	-		-		-	-	-		-	-	-	-	-	-	-
3634409 BH21_5.4-5.5 Finch Street Shaft SH06 Soil Silty SAND (Natura	al) -	-	-							- :		-		-		-		- :		-		-	-	-			-	-	-	-	-	-
3590857 BH22 0.2-0.3 Finch Street - Soil Sandy SILT (FIII) 3590857 BH22 0.6 Finch Street - Soil CLAY (FIII)			-					-:-			-	-	1 1	- :		-		-		-		-	-			-	-	-	-	-	-	-
3658963 + 3658961 BH25_0.2-0.3 Myrtle Street Shaft SH07 Soil Sandy SILT (Fill) 3658963 BH25_1.5-1.6 Myrtle Street Shaft SH07 Soil CLAY (Natural)	-		-		-		-	-		-	-	-		-	-	-		-		-		-	-	-		-	-	-	-	-	-	-
3620390 + 3621286 BH29 0.05-0.2 736 Great North Road - Soil SILT (Fill)) -		-		<0.014 <0.	014 <0.014	< 0.014	< 0.014	<0.014 <0.0	14 <0.014	<0.014	<0.014	<0.014 <0.014	<0.014	<0.014	<0.014	<0.014 <0.014	<0.014	<0.014	<0.014	<0.014 <0.014	<0.014	-	-		-	-	-	-	-	-	-
3502999 + 3553099 BH30 0.22 Western Springs Park Soil Sandy SILT (FIII) 5352999 + 3353099 BH30 0.62 Western Springs Park Soil CLAF (FIII) 5354099 BH35 3-4-3.5 Ophir Street Shart SH09 Soil Silty CLAF (FIII)		- :	-: -	: :	- :		- :	-:-	: :	- :	- :		: :	- :	- :	:	: :	-:	- : -	-:		-	- :	-:	: :	- :	-:	- :		:	:	: -
3634409 BH35 4.0-4.1 Ophir Street Shaft SH09 Soil Clayey SILT (Natura	ral) -	-0.06	-0.06 -0		-		-	-		-	-	-				-	- -	-		-		-	-	-		-	-	-	-	-	-	
	- 0.00						-	-		-	-	-		-	-	-		-	-	-		-	-	-		-	-	-	-	-	-	-
3634409 BH39 12.0-12.45 Burgovne Street Shaft SH11 Soil Siltstone (Natural)	I) -	-	-				-	-		+ :	-	-		-	-	-		+ :		-		-	-	-		-	-	-	-	-	-	-
3634409 BH39 3.0-3.45 Burgoyne Street Shaft SH11 Soil CLAY (Natural) 3634409 BH39 6.0-6.45 Burgoyne Street Shaft SH11 Soil Siltstone (Natural)	1) -	-	-					-			-	-		-	-	-		- :		-		-	-	-		-	-	-	-	-	-	-
3634409 BH39 9.0-9.45 Burgoyne Street Shaft SH11 Soil Slitstone (Natural) 3651482 + 3651494 BH44 0.3-0.4 Basque Park Shaft SH12A Soil Clayey SILT (Landfit)	l) - fill) -	+ : +			+ : + :		+ : +	-:-		+ :	+ -	-		+ :	+ : +	-		+ :-	+ : +	-		-	-			-	-	-	-	-	-	-
3651462 + 3651494 BH44 (1.5-1.0 Basque Park Shaft SH12A Soil Clayey SILT (Landi 3651462 + 3651494 BH44 (1.1-1.2 Basque Park Shaft SH12A Soil Clayey SILT (Landi 3651462 - 3651494 BH44 (1.5-1.0 Basque Park Shaft SH12A Soil Sandstone (Matura	fill) - al) -		-					-		-	-	-		-		-		-		-		-	-	-		-	-	-	-	-	-	-
3651482 + 3651494 BH44_3.0-3.4 Basque Park Shaft SH12A Soil Clayey SILT (Landfi	fill) -	- :		: :	1 : 1		- :	-:-	: :	- :	- :	-	: :	+ :	1:1	-	-: :	1 :	- : -	-:	: :	-	-	-:	: :	- :	-:			:	:	
3651482 BH44 6.0-8.3 Basque Park Shaft SH12A Soil Clayey SILT (Natural S65446+ 3655467 BH45 0.8-1.0 Basque Park Shaft SH12 Soil Clayey SILT (Laurdi 3655466+ 3855467 BH46 0.4-0.5 Basque Park Shaft SH12 Soil Clayey SILT (Laurdi 565466+ 3855467 BH46 0.4-0.5 Basque Park Shaft SH12 Soil Clayey SILT (Laurdi 565466+ 3855467 BH46 0.4-0.5 Basque Park Shaft SH12 Soil Clayey SILT (Laurdi 565466+ 3855467 BH46 0.4-0.5 Basque Park Shaft SH12 Soil Clayey SILT (Laurdi 565466+ 3855467 BH46 0.4-0.5 Basque Park Shaft SH12 Soil Clayey SILT (Laurdi 565466+ 3855467 BH46 0.4-0.5 B	fill) -	1					-				1	-		-		-				-		-	-	-		-	-	-	-	-	-	
3655466 + 3655467 BH46 1.4-1.6 Basque Park Shaft SH12 Soil Clayey SILT (Landfi	fill) -							-:	1 1		1	-				-		1				-							-			-
365993 BH46 120-12.1 Basque Park Shaft SH12 Soil Sandstone (Natura 365963 + 3670623 365993 BH46 3.5-3.6 Basque Park Shaft SH12 Soil Sandy SILT (Landil 365963) 365993 BH46 3.5-3.7 Basque Park Shaft SH12 Soil Sandstone (Natura 365963)	Fill) -	-	-				-				-	-		-	-	-		-		-		-	-	-			-	-	-	-	-	
3620390 + 3621286 BH48 0.05-0.2 Copper Street Shaft SH13 Soil SILT (Fill)	al) -	- :	-		1 :		-	-		-	-	-		-	-	-		-	-	-		-	-	-		-	-	-	-	-	-	-
3634409 BH48_3.0-3.1 Copper Street Shaft SH13 Soil Slitstone (Natural) 3634409 BH48_6.5-6.7 Copper Street Shaft SH13 Soil Sandstone (Natural)		-	-		-		-	-		-	-	-		-	-	-		-	-	-		-	-	-		-	-	-	-	-	-	-
3624327 RH49 0 05.0 2 Arch Hill Reserve Shaft SH14 Soil SII T (Fill)	<0.06	<0.06	<0.06 <0	0.06 <0.12	-			-		-	-	-		-		-		-		-		-	-	-		-	-	-	-	-	-	-
3634409 BH49 2.7-2.8 Arch Hill Reserve Shaft SH14 Soil Silty CLAY (Natural	al) -	-	-		1:1	: :	- :	-:-	: :	- :	1 :	- :	: :	1 :	1:1	-	-: :	1 :		-:	: :	-	- :	-:	: :	- :	-:	:		:	:	-
3634409 BH49 5.9-6.0 Arch Hill Reserve Shaft SH14 Soil Sandstone (Natural	al) -	·	-		1 - 1		-	-		-	-	-				-	- -	-	·	-		-	-	-		-	-	-	-	-	-	-
3651482 + 3651494 BH51 0.5-0.6 Arch Hill Reserve Shaft SH15 Soil SILT (Fill)	-	-	-		-		-	-		-	-	-		-	-	-		-		-		-	-	-		-	-	-	-	-	-	-
3651482 BH51_2.0-2.45 Arch Hill Reserve Shaft SH15 Soil CLAY (Natural)		- :	-		- :			-:		- :	-	-		- :	-	-		- :		-		-	-				-	-	-	-	-	-
3655466 BH51 8.0-8.45 Arch Hill Reserve Shaft SH15 Soil SAND (Natural)		-	-				-				1	-			-	-		1		-		-	-	-		-	-	-	-	-	-	
3670643 BH17 1.5-1.95 52 Kingsland Ave Shaft SH05 Soil Silty CLAY (Natura	i) -	-	-		-		-			-	-	1		-		-		-				-	-	-		-	-	-	-	-	-	-
3670643 BH17 7.5-7.95 52 Kingsland Ave Shaft SH05 Soil Siltstone (Natural) 3670643 BH17 13.5-13.64 52 Kingsland Ave Shaft SH05 Soil Sandstone (Natura	i) -	1:1	:	: :	1:1	: :	1:1	-:-	: :	1:	-		: :	1 :	1:1	- 1	: :	-		-:		-	:	:		1:	-	:		:	:	-
3670643 BH25_16.5-16.6 Myrtle Street Shaft SH07 Soil Sandstone (Natura	al) -	1		- -		. -				1	<u> </u>			<u> </u>	-	-		Ė			- -	-			- -	1			-	-		-
3670643 BH36 2.5-2.6 Ophir Street Shaft SH09 Soil Silty CLAY (Fill)	-	+ : +	-		+ : +		+ :	-:-		+ :	-	-		-	+ : +	-		-	:			-	-	-		-	-	-	-	-	:	-
3682863 + 3683703 BH43_0.5-0.6 Fleet Street Shaft SH12A Soil CLAY (Fill)	-	+ : -	-		+: $+$: $+$: $+$: $+$: $+$: $+$: $+$: $+$: $+$:		-		- : :	+ :	1			1		-		-		-		-	-			+ -	-	-	-	-		
3683703 BH43_2.3 Fleet Street Shaft SH12A Soil SILT (Fill) 3674838 + 3674826 BH14_0.6-0.7 Nixon Park Carpark Shaft SH04 Soil CLAY (Fill)	<0.07	<0.07	<0.07 <0	1.13 <0.07	+ :		-	-:-	: :	-	-			-	+ :	-		-	+ :	\exists		-	-			-	-		-	:	:	-
3683703 BH14 2.5-2.6 Nixon Park Carpark Shaft SH04 Soil SILT (Natural)	al) -	- : -					- :	-:-		-	-	- :		- :		:		-	- : -	-:-		-				-	-	-	-	:	: -	: -
3674838 + 3674826 BH38 1.1-1.2 Gundry Street Shaft SH10 Soil SILT (Natural)	<0.06	<0.06	<0.06 <0).11 <0.06	<0.5	0.5 <0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5 <1.0		<1.0	<0.5	<2 <0.8	<1.0	<1.0	- 1	<0.5	<0.5	<0.5	<1.0 <	0.8 <0.5	<0.5	<0.4	<0.5	<10	<0.5 <	<0.5	0.5
3694107 BH38_6.9-7.0 Gundry Street Shaft SH10 Soil Siltstone (Natural)		1 - 1	-	- -		- -			- 1 -		-		- -	<u> </u>		-	- -	-		-	- -	-	-	-	- -			- 1	-	-	- 1	- 1

#I Default value is or pH of S. Concentrations increase with increasing pH (see methodology).
#I Default value is or pH of S. Concentrations increase with increasing pH (see methodology).
#I Value for Invariant increasing pH (see methodology).
#I Value is for increasing pH (see methodology).
#I To SCS value is opticable to either dieldrin or altim separately, or to the sum of aldrin and dielrin if both are involved.
#I DOI (as the sum of DDI and its metabolites DDD and DDE).
#I Value is for total chromium.
#I Value is for total chromium. Work suppests special cases have been found to apply for Ti Point Basalts (Cri, Mt Smart Volcanics (Pb) and as such these lift #I Value for fold chromium. Work suppests special cases have been found to apply for Ti Point Basalts (Cri, Mt Smart Volcanics (Pb) and as such these lift #I Value for fold kyrien (on, and of).
#I Value for fold kyrien (on, and of).
#I Value for fold kyrien (on, and of).
#I I Value for fold kyrien (on, and of).
#I Residual Separate Phase Hydrocarbons (RSPH)

Environmental Standards

A - Ministry for the Environment, 2012, NESCS - Commercial / Industrial

B - NEPC, 2013, NEPM (N.Z. only) - Commercial Industrial

B - NEPC, 2013, NEPM (N.Z. only) - Commercial Industrial

C - Auckland Council, 2016, Auckland Unitary Plan - Chapter E30 - Permitted Activity Criteria.

D - Auckland Council, 2016, Auckland Unitary Plan - Chapter E30 - Backpround - Voicaria Soils.

E - wastel NINZ, Seetherber 2023, Class 3 Manageef III Waste Acceptance Criteria

F - Ministry for the Environment, August 1999, Module 4, Tier 1 Maintenance worker (SAND)

G - Ministry for the Environment, August 1999, Module 4, Tier 1 GWZ m (CLAY)(SANDY SILT)

H - BRANZ, 2017, NZ GAMAS (Asbestos) Commerical/ industrial

Table H2: Groundwater results Project: WIWQIP Motions Catchment Improvement Client: Watercare Aurecon ref: 521290-064



						Inorgani		-	PH										PAH														Phenols		
						cs	-	<u> </u>	rn I	1			1					1	РАП			1											Phenois		
						ISS	62-69	C15-C36	C7-C36	C10-C14	2-methylnaphthalene	Acenaphthene								Pyrene	3/4-Methylphenol (m/p- cresol)	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2,4-Dimethylphenol	2-Chlorophenol	2-Methylphenol	2-Nitrophenol							
						mg/L	mg/L	mg/L	mg/L	μg/L	μg/L	μg/L	μg/L	µg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L
Module 5, Tier	Groundwater Acc	ceptance Criteria, Potable ^A					18 ^{#1}	#2		#2																									
Module 5. Tier	Groundwater Acc	ceptance Criteria, Irrigation ^A					#2	#2		#2														800			2,000								
		LOSP 80% (July 2023) ^B												7#3		0.7#3					2 ^{#3}			85 ^{#4}		8 ^{#3}	_,,,,,			95#4	270#5		870 ^{#6}		
																•					_														
Lab Report No	Field ID	Location	Characterising	Date	Matrix Type																														
3680726	BH06_01	Suffolk Reserve	Shaft SH02	26 09 2024		4,200	-	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.2	<0.10	<0.5	<0.10	<0.4	<0.2	-	-	-	-	-	-	-	-
3680726	BH10_01	Mostyn Street	Shaft SH03		Groundwater	480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			-
3680726	BH44_01	Basque Park	Shaft SH12A	26 09 2024		-	<0.10	<0.4	<0.7	<200	<3	<0.10	<0.10		<0.10	<0.10	<0.10		<0.10		<0.10	<0.2		<0.5	<0.10	<0.4	<0.2	<10	<10	<10	<5	<5	<5	<5	<10
3680726	BH46_02	Basque Park	Shaft SH12		Groundwater	36,000	<0.10	<0.4	<0.7	<200	<3	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.2	<0.10	<0.5	<0.10	<0.4	<0.2	<10	<10	<10	<5	<5	<5	<5	<10
3680726	BH51_01	Arch Hill Reserve	Shaft SH15		Groundwater	96	-	-	-	-	-	-	-	-	-	-	í	-	í	-	-	-	í	-	-	-	-	-	-	·	-	·	i - J	-	-
3683704	BH17_01	52 Kingsland Ave	Shaft SH05		Groundwater	30	-	-	-	-	-	-	-	-	-	-	,	-	,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3683704	BH25_01	Myrtle Street	Shaft SH07		Groundwater	36	-	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.2	<0.10	<0.5	<0.10	<0.4	<0.2	-	-	-	-	-	-	-	-
3683704	BH36_01	Ophir Street	Shaft SH09		Groundwater	15,100	<0.10	<0.4	<0.7	<200	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.2	<0.10	<0.5	<0.10	<0.4	<0.2	-	-	-	-	-	-	-	-
3683704	BH38_01	Gundry Street	Shaft SH10	30 09 2024	Groundwater	2,700	<0.10	<0.4	<0.7	<200	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.2	<0.10	<0.5	<0.10	<0.4	<0.2	-	[-]	-	-	-	[-]		-
3690956	BH14-01	Nixon Park Carpark	Shaft SH04	10 10 2024	Groundwater	7,100	<0.10	<0.4	<0.7	<200	<3	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.2	<0.10	<0.5	<0.10	<0.4	<0.2	<10	<10	<10	<5	<5	<5	<5	<10
3690956	BH39-01	Burgoyne Street	Shaft SH11	10 10 2024	Groundwater	123	<0.10	<0.4	<0.7	<200	<3	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.2	<0.10	<0.5	<0.10	<0.4	<0.2	<10	<10	<10	<5	<5	<5	<5	<10
Statistics																																			
Minimum Cond	entration					<3	<0.1	<0.4	<0.7	<200	<3	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.1	<0.4	<0.2	<10	<10	<10	<5	<5	<5	<5	<10
Maximum Con	centration					36,000	0.62	<0.4	1.8	1,100	23	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.5	<0.1	<0.4	<0.2	<10	<10	<10	<5	<5	<5	<5	<10
% of Detects						86	14	0	14	14	20	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0
% of Non-Dete	cts					14	86	100	86	86	80	100	100	100	100	100	100	100	100	100	100	100	100	85	100	100	100	100	100	100	100	100	100	100	100

Comments

#1 ESL #2 >S #3 Unknown reliability

#3 Unknown reliability
#4 Low reliability
#5 Low reliability. DGV may not protect key test species from chronic toxicity (this refers to experimental chronic values or geometric mean for species). Check toxicant DGV technical brief for spread of data and its significance.
#6 Moderate reliability. DGV may not protect key test species from chronic toxicity (this refers to experimental chronic values or geometric mean for species). Check toxicant DGV technical brief for spread of data and its significance.
#7 Moderate reliability
#8 Very high reliability. DGV may not protect key test species from chronic toxicity (this refers to experimental chronic values or geometric mean for species). Check toxicant DGV technical brief for spread of data and its significance.
#9 High reliability
#10 Very Low reliability
#11 Moderate reliability. DGV may not protect key test species from acute (and chronic) toxicity. Check toxicant DGV technical brief for spread of data and its significance. This DGV is greater than the value for acute toxicity (Warne et al., 2018).

Environmental Standards
A: Mfe, 1999. MfE Petroleum Guidelines. Module 5: Teir 1 groundwater acceptance criteria.
B: ANZG, July 2023, ANZG Freshwater Toxicant DGVs LOSP 80% (July 2023)



									Amino																										
									Aliphati	Chlor																									
									cs	Hydroc	arbons				Metals				E	xplosives	3	Ha	logenate	l Benzene	s								Organoch	hlorine Pe	ticides
						4-chloro-3-methylphenol	Pentachlorophenol	Phenol	N-nitrosodi-n-propylamine	Hexachloroethane	Hexachlorobutadiene	Arsenic (filtered)	Cadmium (filtered)	Copper (filtered)	Chromium (III+VI) (filtered)	Lead (filtered)	Nickel (filtered)	Zinc (filtered)	2,6-dinitrotoluene	2,4-Dinitrotoluene	Nitrobenzene	1,2,4-trichlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Hexachlorobenzene	4,4-DDE	а-ВНС	Aldrin	р-внс	d-ВНС	QQQ	рот	Dieldrin	Endosulfan I
						μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L
		ceptance Criteria, Potable ^A																																	
Module 5, Tier 1	Groundwater Acc	ceptance Criteria, Irrigation ^A																																	
ANZG Freshwa	er Toxicant DGVs	LOSP 80% (July 2023) ^B					27 ^{#7}	1,200 ^{#7}		500 ^{#7}			0.8 ^{#8}	2.5 ^{#8}		9.4 ^{#6}	17 ^{#4}	31 ^{#9}		250 ^{#6}	1,300#4	300 ^{#5}	270 ^{#7}	520 ^{#6}	100 ^{#10}	0.3 ^{#3}							0.04 ^{#7}		
		,																					•	•	•										
Lab Report No		Location	Characterising	Date	Matrix Type																														
3680726	BH06_01	Suffolk Reserve	Shaft SH02		Groundwater	-	-	-	-	-	-	<1.0	0.17	2.6	<0.5	0.17	34	62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
3680726	BH10_01	Mostyn Street	Shaft SH03		Groundwater	-	-	-	-	-	-	<1.0	<0.05	<0.5	<0.5		1.3		-	-	-	-	-	-	-	-	-	-	-	-	-			-	-
3680726	BH44_01	Basque Park	Shaft SH12A		Groundwater	<10	<100	<10	<10	<10	<10	1.9	<0.05	1.0	<0.5	<0.10	3.4	2.4	<10	<10	<5	<5	<10	<10	<10	<5	<5	<5	<5	<5	<5	<5	<10	<5	<10
3680726	BH46_02	Basque Park	Shaft SH12		Groundwater	<10	<100	<10	<10	<10	<10	<1.0	<0.05	1.2	<0.5	<0.10	2.7	11.7	<10	<10	<5	<5	<10	<10	<10	<5	<5	<5	<5	<5	<5	<5	<10	<5	<10
3680726	BH51_01	Arch Hill Reserve	Shaft SH15		Groundwater	-	-	-	-	-	-	<1.0	<0.05	1.3	<0.5	<0.10	5.4	4.9	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-
3683704	BH17_01	52 Kingsland Ave	Shaft SH05		Groundwater	-	-	-	-	-	-	<1.0	<0.05	0.5	<0.5		<0.5	2.4	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-
3683704	BH25_01	Myrtle Street	Shaft SH07		Groundwater	-	-	-	-	-	-	<1.0	<0.05	0.6	<0.5	<0.10	1.7	9.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3683704	BH36_01	Ophir Street	Shaft SH09	30 09 2024	Groundwater	-	l -	-	-	-	-	<1.0	<0.05	<0.5	<0.5	<0.10	5.5	23	- 1	- 1	-	- 1	- 1	- 1	- 1	- 1	- 1	- 1	-	-	-	- 1	I - I	-	-
3683704	BH38_01	Gundry Street	Shaft SH10	30 09 2024	Groundwater	-	-	-	-	-	-	<1.0	< 0.05	2.4	<0.5	<0.10	9.6	13.5	-	-	-	-	-	-	-	-	-	-	-	-	-	- 1	- T	-	-
3690956	BH14-01	Nixon Park Carpark	Shaft SH04	10 10 2024	Groundwater	<10	<100	<10	<10	<10	<10	<1.0	< 0.05	2.1	<0.5	<0.10	0.7	3.4	<10	<10	<5	<5	<10	<10	<10	<5	<5	<5	<5	<5	<5	<5	<10	<5	<10
3690956	BH39-01	Burgoyne Street	Shaft SH11	10 10 2024	Groundwater	<10	<100	<10	<10	<10	<10	<1.0	<0.05	0.8	<0.5	<0.10	4.5	9.7	<10	<10	<5	<5	<10	<10	<10	<5	<5	<5	<5	<5	<5	<5	<10	<5	<10
Statistics																						•									•			•	
Minimum Cond						<10	<100	<10	<10	<10	<10	<1	<0.05	0.5	<0.5	<0.1	<0.5	<1	<10	<10	<5	<5	<10	<10	<10	<5	<5	<5	<5	<5	<5	<5	<10	<5	<10
Maximum Con	entration	·				<10	<100	<10	<10	<10	<10	1.9	0.17	2.6	0.6	0.17	34	62	<10	<10	<5	<5	<10	<10	<10	<5	<5	<5	<5	<5	<5	<5	<10	<5	<10
% of Detects						0	0	0	0	0	0	7	7	73	7	7	80	87	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Dete	ets					100	100	100	100	100	100	93	93	27	93	93	20	13	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Comments
#1 ESL
#2 > S
#3 Unknown reliability
#4 Low reliability
DGV may not protect key test species from chronic toxicity (this refers to experimental chronic value
#6 Moderate reliability. DGV may not protect key test species from chronic toxicity (this refers to experimental chronic
#7 Moderate reliability. DGV may not protect key test species from chronic toxicity (this refers to experimental chronic
#8 Very high reliability. DGV may not protect key test species from chronic toxicity (this refers to experimental chronic
#9 High reliability
#10 Very Low reliability
#11 Moderate reliability. DGV may not protect key test species from acute (and chronic) toxicity. Check toxicant DGV

Environmental Standards
A: Mfe, 1999. MfE Petroleum Guidelines. Module 5: Teir 1 groundwater acceptance criteria.
B: ANZG, July 2023, ANZG Freshwater Toxicant DGVs LOSP 80% (July 2023)



													I																	
															Phtha	alates								svo	nCe.					
						—	1	1	1				9			ilates					+			1) 				$\overline{}$	
						dosulfan II	dosulfan sulphate	Æ	rin ketone	BHC (Lindane)	tachlor	tachlor epoxide	2-ethylhexyl) phthalate	utyl benzyl phthalate	ethyl phthalate	-octyl phthalate	thylphthalate	-butyl phthalate	1&2-Chloronaphthalene		itrosodiphenylamine • nenylamine	oazole	ophorone	romophenyl phenyl er	hlorophenyl phenyl er	zyl alcohol	s(2-chloroethoxy) thane	s(2-chloroethyl)ether	s(2-chloroisopropyl) ner	enzofuran
						<u> </u>	ᇤ	<u> </u>	<u>E</u>	張	후	후	3is(, ž		높	<u>š</u>	놀	82)i(2-	N-Nitro Dipher	a	Sop	불분	호류	ᇤ	3is()sis	ig 3is	, ≝
						µg/L	µg/L	µg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	g/m3	μg/L	g/m3	µg/L	μg/L	μg/L	μg/L	µg/L	μg/L	μg/L	µg/L	μg/L
Module 5. Tier 1	Groundwater Acceptar	nce Criteria, Potable ^A				i i	i i	İ	l i	i i	ı	ı	, č	- 1 0	ı	, ŭ	ı	, ŭ	Ŭ	10	Ŭ	-i	10	İ	, i	, i	ı			
	Groundwater Acceptar																													
	ter Toxicant DGVs LOS							0.06#11		4 #11	0.7 ^{#11}				5,100#4		1,300#4	65#4												
ANZG FIESHWAL	lei Tuxicani DGVS LOSI	1 00% (July 2023)						0.00			0.7				5,100		1,300	00												
Lab Report No.	Field ID Locat	tion	Characterising	Date	Matrix Type																									
3680726	BH06 01	Suffolk Reserve	Shaft SH02			T -	T -	Ι -	l -	I - I	-	- 1	-	-	I - I	-	- 1	-	- 1	-	- 1	- 1	-	l -	- 1	- 1	- 1	- 1	- 1	- 1
3680726	BH10 01	Mostyn Street	Shaft SH03	26 09 2024		-	-	-	-	- 1	-	-	-	-	- 1	-	-	-	-	-	-	-	-	-	- 1	-	-		-	-
3680726	BH44 01	Basque Park	Shaft SH12A	26 09 2024		<10	<10	<10	<10	<5	<5	<5	<30	<10	<10	<10	<10	<10	<0.003	<5	<0.010	<5	<5	<5	<5	<50	<5	<5	<5	<5
3680726	BH46 02	Basque Park	Shaft SH12	26 09 2024	Groundwater	<10	<10	<10	<10	<5	<5	<5	<30	<10	<10	<10	<10	<10	<0.003	<5	<0.010	<5	<5	<5	<5	<50	<5	<5	<5	<5
3680726	BH51 01	Arch Hill Reserve	Shaft SH15	26 09 2024	Groundwater	-	-	-	-	- 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	- 1	-	-	-	-
3683704	BH17 01	52 Kingsland Ave	Shaft SH05	30 09 2024	Groundwater	-	-	-	-	- 1	-	-	-	-	- 1	-	-	-	-	-	-	-	-	-	- 1	- 1	-	-	-	-
3683704	BH25_01	Myrtle Street	Shaft SH07	30 09 2024	Groundwater	-	-	-	-	- 1	-	-	-	-	- 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3683704	BH36_01	Ophir Street	Shaft SH09	30 09 2024	Groundwater	-	-	-	-	- 1	-	-	-	-	- 1	-	-	-	-	-	-	-	-	-	-	- 1	-	-	-	-
3683704	BH38_01	Gundry Street	Shaft SH10	30 09 2024	Groundwater	-	-	-	-	- 1	-	-	-	-	- 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3690956	BH14-01 N	Nixon Park Carpark	Shaft SH04	10 10 2024	Groundwater	<10	<10	<10	<10	<5	<5	<5	<30	<10	<10	<10	<10	<10	<0.003	<5	<0.010	<5	<5	<5	<5	<50	<5	<5	<5	<5
3690956	BH39-01	Burgoyne Street	Shaft SH11	10 10 2024	Groundwater	<10	<10	<10	<10	<5	<5	<5	<30	<10	<10	<10	<10	<10	<0.003	<5	<0.010	<5	<5	<5	<5	<50	<5	<5	<5	<5
	•		•	•	•	•	•																			•				
Statistics																														
Minimum Conc						<10	<10	<10	<10	<5	<5	<5	<30	<10	<10	<10	<10	<10	<0.003	<5	<0.01	<5	<5	<5	<5	<50	<5	<5	<5	<5
Maximum Cond	centration	<u> </u>	·			<10	<10	<10	<10	<5	<5	<5	<30	<10	<10	<10	<10	<10	<0.003	<5	<0.01	<5	<5	<5	<5	<50	<5	<5	<5	<5
% of Detects						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detec	cts					100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Comments
#1 ESL
#2 > S
#3 Unknown reliability
#4 Low reliability
DGV may not protect key test species from chronic toxicity (this refers to experimental chronic value
#6 Moderate reliability. DGV may not protect key test species from chronic toxicity (this refers to experimental chronic
#7 Moderate reliability. DGV may not protect key test species from chronic toxicity (this refers to experimental chronic
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Environmental Standards
A: Mfe, 1999. MfE Petroleum Guidelines. Module 5: Teir 1 groundwater acceptance criteria.
B: ANZG, July 2023, ANZG Freshwater Toxicant DGVs LOSP 80% (July 2023)

Table H3: TCLP results Project: WIWQIP Motions Catchment Improvement Client: Watercare Aurecon ref: 521290 - 064



				Metals TCLP			
	Arsenic	Cadmium	Chromium (III+VI)	Copper	Fead	Nickel	Zinc
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Class 1 Landfill Waste Acceptance Crite Class 2 C + D Landfill Waste Acceptance Crite		0.2	5	0.5	5	10	10
Class 2 C + D Landnii waste Acceptance Crite	a I	0.2		0.5			
Lab Report No. Field ID + Depth (m) Location Characterising Matrix Type Matrix Description Sample date							
3620390 BH48_0.05-0.2 [TCLP Extract] Copper Street Shaft SH13 Soil SILT (Fill) 06 07 2024	-	-	-	-	0.55	-	-
Statistics							
Minimum Concentration	4	<0.1	12	10	0.55	<2	10
Maximum Concentration	70	0.44	43	52	0.55	80	310
% of Detects	100	67	100	100	100	83	100
% of Non-Detects	0	33	0	0	0	17	0

Environmental Standards wasteMINZ, September 2023, Class 1 and 2 Waste Acceptance Criteria



♦ 0508 HILL LAB (44 555 22)
 ♦ +64 7 858 2000
 ☑ mail@hill-labs.co.nz
 ⊕ www.hill-labs.co.nz

Certificate of Analysis

Page 1 of 1

SPv1

Client: Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 2292 Tauranga 3140 Lab No: 3 Date Received: 3

3610977 20-Jun-2024

Date Reported:

27-Jun-2024

Quote No: Order No:

126272

Client Reference: Submitted By:

521290-064 Tiana Hill

Sample Type: Aqueous	
Sample Name:	BH15_01 20-Jun-2024
Lab Number:	3610977.1
Individual Tests	
Dissolved Mercury g/m ³	< 0.0008
Heavy metals, dissolved, trace As,Cd,Cr,Cu,Ni,F	Pb,Zn
Dissolved Arsenic g/m ³	0.0021
Dissolved Cadmium g/m³	< 0.00005
Dissolved Chromium g/m ³	< 0.0005
Dissolved Copper g/m ³	0.0017
Dissolved Lead g/m ³	< 0.00010
Dissolved Nickel g/m ³	0.0016
Dissolved Zinc g/m³	< 0.0010

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 Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Aqueous			
Test	Method Description	Default Detection Limit	Sample No
Heavy metals, dissolved, trace As,Cd,Cr,Cu,Ni,Pb,Zn	0.45µm Filtration, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.00005 - 0.0010 g/m ³	1
Filtration for dissolved metals analysis	Sample filtration through 0.45µm membrane filter and preservation with nitric acid. APHA 3030 B: Online Edition.	-	1
Filtration for dissolved metals analysis - Misc	Sample filtration through 0.45µm membrane filter and preservation with nitric acid. APHA 3030 B: Online Edition.	-	1
Dissolved Mercury	0.45µm filtration, bromine oxidation followed by atomic fluorescence. US EPA Method 245.7, Feb 2005.	0.00008 g/m ³	1

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

Testing was completed between 24-Jun-2024 and 27-Jun-2024. 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.

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

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







♦ 0508 HILL LAB (44 555 22)
 ♦ +64 7 858 2000
 ☑ mail@hill-labs.co.nz
 ⊕ www.hill-labs.co.nz

Certificate of Analysis

Page 1 of 4

SPv1

Client: Contact:

Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149

 Lab No:
 3680726

 Date Received:
 26-Sep-2024

 Date Reported:
 04-Oct-2024

Quote No:

Order No:

Client Reference: 521290-064 Submitted By: 521290-064

126272

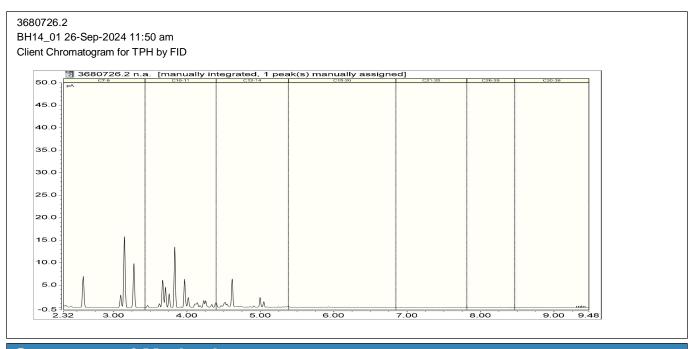
Sample Type: Aqueous						
1 21 1		D. 100 04	51111 61	51151 61	51111 01	51110 00
San	nple Name:	BH06_01 26-Sep-2024	BH14_01 26-Sep-2024	BH51_01 26-Sep-2024	BH44_01 26-Sep-2024	BH46_02 26-Sep-2024
	h Number	12:40 pm 3680726.1	11:50 am 3680726.2	11:00 am 3680726.3	2:50 pm 3680726.4	2:25 pm 3680726.5
Individual Tests	b Number:	3000720.1	3660726.2	3000720.3	3000720.4	3660726.5
	/3	4.000	4.040	00		20,000
Total Suspended Solids	g/m³	4,200	1,340	96	-	36,000
Heavy metals, dissolved, trace As,						
Dissolved Arsenic	g/m³	< 0.0010	< 0.0010	< 0.0010	0.0019	< 0.0010
Dissolved Cadmium	g/m³	0.00017	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Dissolved Chromium	g/m³	< 0.0005	0.0006	< 0.0005	< 0.0005	< 0.0005
Dissolved Copper	g/m³	0.0026	0.0026	0.0013	0.0010	0.0012
Dissolved Lead	g/m³	0.00017	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Dissolved Nickel	g/m³	0.034	0.0010	0.0054	0.0034	0.0027
Dissolved Zinc	g/m³	0.062	0.0035	0.0049	0.0024	0.0117
Polycyclic Aromatic Hydrocarbons	Screening in V	Vater, By Liq/Liq				
Acenaphthene	g/m³	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Acenaphthylene	g/m³	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Anthracene	g/m³	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Benzo[a]anthracene	g/m³	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Benzo[a]pyrene (BAP)	g/m³	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Benzo[b]fluoranthene + Benzo[j] fluoranthene	g/m³	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Benzo[g,h,i]perylene	g/m³	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Benzo[k]fluoranthene	g/m³	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Chrysene	g/m³	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Dibenzo[a,h]anthracene	g/m³	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Fluoranthene	g/m³	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Fluorene	g/m³	< 0.0002	< 0.0002	-	< 0.0002	< 0.0002
Indeno(1,2,3-c,d)pyrene	g/m³	< 0.00010	< 0.00010	-	< 0.00010	< 0.00010
Naphthalene	g/m³	< 0.0005	0.099	-	< 0.0005	< 0.0005
Phenanthrene	g/m³	< 0.0004	< 0.0004	-	< 0.0004	< 0.0004
Pyrene	g/m³	< 0.0002	< 0.0002	-	< 0.0002	< 0.0002
Haloethers in SVOC Water Sampl	es by GC-MS					
Bis(2-chloroethoxy) methane	g/m³	-	< 0.005	-	< 0.005	< 0.005
Bis(2-chloroethyl)ether	g/m³	-	< 0.005	-	< 0.005	< 0.005
Bis(2-chloroisopropyl)ether	g/m ³	-	< 0.005	-	< 0.005	< 0.005
4-Bromophenyl phenyl ether	g/m ³	-	< 0.005	-	< 0.005	< 0.005
4-Chlorophenyl phenyl ether	g/m ³	-	< 0.005	-	< 0.005	< 0.005





2.8 - Districtorousene 9m² - < 0.010 - < 0.005 - < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.001 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.0	Sample Type: Aqueous						
Lab Number \$880726.1 \$880726.2 \$880726.3 \$880726.4 \$880726.5 \$88	Samp	le Name:	26-Sep-2024	26-Sep-2024	26-Sep-2024	26-Sep-2024	26-Sep-2024
2.4 Dinitrotouses gm²	Lab	Number:	3680726.1	3680726.2	3680726.3	3680726.4	3680726.5
2.8-Dialricotouene	Nitrogen containing compounds in S	VOC Water	Samples by GC-M	S*			
Nitrobarcene	2,4-Dinitrotoluene	g/m³	-	< 0.010	-	< 0.010	< 0.010
N-Netrosodiphenyslamine g/m² - < 0.010 - < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0.010 < 0	2,6-Dinitrotoluene	g/m³	-	< 0.010	-	< 0.010	< 0.010
N-Nitroscophenysamine + g/m² - < 0.010 - < 0.010 < 0.010 Colphenysamine + g/m² - < 0.005 - < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 <	Nitrobenzene	g/m³	-	< 0.005	-	< 0.005	< 0.005
Diphenylamine*	N-Nitrosodi-n-propylamine	g/m³	-	< 0.010	-	< 0.010	< 0.010
Addrin g/m²	N-Nitrosodiphenylamine + Diphenylamine*	g/m³	-	< 0.010	-	< 0.010	< 0.010
alpha-BHC g/m³ - < 0.005 - < 0.005 < 0.005	Organochlorine Pesticides in SVOC	Water Samp	oles by GC-MS				
Deta-BHC 9/m² 	Aldrin	g/m³	-	< 0.005	-	< 0.005	< 0.005
delta-BHC g/m3	alpha-BHC	g/m³	-	< 0.005	-	< 0.005	< 0.005
gamma-BHC (Lindane) g/m² - < 0.005 - < 0.005 < 0.005 < 4.4-DDD g/m² - < 0.005 - < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 < 0.00	beta-BHC	g/m³	-	< 0.005	-	< 0.005	< 0.005
4.4-DDD	delta-BHC	g/m³	-	< 0.005	-	< 0.005	< 0.005
4.4-DDE g/m³ - <0.005 - <0.005 <0.005 <0.005 <4.005 <4.005 <4.005 <4.005 <4.005 <4.005 <4.005 <4.005 <4.005 <4.005 <4.005 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0010 <4.0	gamma-BHC (Lindane)	g/m³	-	< 0.005	-	< 0.005	< 0.005
4.4-DDT	4,4'-DDD	g/m³	-	< 0.005	-	< 0.005	< 0.005
Dieledrin g/m3 - < 0.005 - < 0.005 < 0.005	4,4'-DDE	g/m³	-	< 0.005	-	< 0.005	< 0.005
Endosulfan I g/m³ - < < 0.010	4,4'-DDT		-	< 0.010	-	< 0.010	< 0.010
Endosulfan II g/m³ - < <0.010 - < <0.010 < <0.010 < <0.010 Endosulfan Sulphate g/m³ - < <0.010 - < <0.010 < <0.010 < <0.010	Dieldrin	g/m³	-	< 0.005	-	< 0.005	< 0.005
Endosulfan sulphate g/m³ - < < 0.010 - < 0.010 < < 0.010 Endrin g/m³ - < < 0.010 - < 0.010 < < 0.010 < < 0.010 Endrin g/m³ - < < 0.010 - < < 0.010 < < 0.010 < < 0.010 Endrin ketnone g/m³ - < < 0.010 - < < 0.010 < < 0.010 < < 0.010 Heptachlor g/m³ - < < 0.005 - < < 0.005 - < < 0.005 < < 0.005 Heptachlor gowide g/m³ - < < 0.005 - < < 0.005 - < < 0.005 < < 0.005 Heptachlor epoxide g/m³ - < < 0.005 - < < 0.005 - < < 0.005 < < 0.005 Heptachlor denzene g/m³ - < < 0.005 - < < 0.005 - < < 0.005 Polycyclic Aromatic Hydrocarbons in SVOC Water Samples by GC-MS Acenaphthene g/m³ - < < 0.003 - < 0.003 - < 0.003 < 0.003 Acenaphthylene g/m³ - < < 0.003 - < 0.003 < 0.003 < 0.003 Acenaphthylene g/m³ - < < 0.003 - < 0.003 < 0.003 < 0.003 Benzo[a]pytene (BAP) g/m³ - < < 0.003 - < 0.003 < 0.003 < 0.003 Benzo[a]pytene (BAP) g/m³ - < < 0.003 < 0.003 < 0.003 < 0.003 Benzo[a]pytene Benzo[j] g/m³ - < < 0.003 < 0.003 < 0.003 < 0.003 Benzo[a]pytene g/m³ - < < 0.003 < 0.003 < 0.003 < 0.003 Benzo[a]pytene g/m³ - < < 0.003 < 0.003 < 0.003 < 0.003 Benzo[a]pytene g/m³ - < < 0.003 < 0.003 < 0.003 < 0.003 Benzo[a]pytene g/m³ - < < 0.003 < 0.003 < 0.003 < 0.003 Benzo[a]pytene g/m³ - < < 0.003 < 0.003 < 0.003 < 0.003 Benzo[a]pytene g/m³ - < < 0.003 < 0.003 < 0.003 < 0.003 Benzo[a]pytene g/m³ - < < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 Benzo[a]pytene g/m³ - < < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 Benzo[a]pytene g/m³ - < < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.003 < 0.	Endosulfan I	g/m³	-	< 0.010	-	< 0.010	< 0.010
Endrin g/m³ - <0.010 - <0.010 <0.010 <0.010 Endrin ketone g/m³ - <0.010 - <0.010 <0.010 <0.010 Endrin ketone g/m³ - <0.005 - <0.005 <0.005 <0.005 Heptachlor g/m³ - <0.005 - <0.005 <0.005 <0.005 Heptachlor epoxide g/m³ - <0.005 - <0.005 <0.005 <0.005 Hexachlorobenzene g/m³ - <0.005 - <0.005 <0.005 <0.005 Hexachlorobenzene g/m³ - <0.005 - <0.005 <0.005 Hexachlorobenzene g/m³ - <0.005 - <0.005 <0.005 Hexachlorobenzene g/m³ - <0.000 - <0.005 Acenaphthylene g/m³ - <0.003 - <0.003 <0.003 Acenaphthylene g/m³ - <0.003 - <0.003 <0.003 Anthracene g/m³ - <0.003 - <0.003 Benzo[a]phrene (BAP) g/m³ - <0.003 - <0.003 Benzo[a]phrene (BAP) g/m³ - <0.003 - <0.003 Benzo[a]phrene Benzo[j] g/m³ - <0.003 - <0.003 Benzo[g/hitoranthene + Benzo[j] g/m³ - <0.003 Benzo[g/hitoranthene g/m³ - <0.003 <0.003 Benzo[g/hitoranthene g/m³ - <0.003 <0.003 Benzo[g/hitoranthene g/m³ - <0.003 <0.003 Benzo[g/hitoranthene g/m³ - <0.003 <0.003 Benzo[g/hitoranthene g/m³ - <0.003 <0.003 <0.003 Benzo[g/hitoranthene g/m³ - <0.003 <0.003 <0.003 Benzo[g/hitoranthene g/m³ - <0.003 <0.003 <0.003 Benzo[g/hitoranthene g/m³ - <0.003 <0.003 <0.003 Benzo[g/hitoranthene g/m³ - <0.003 <0.003 <0.003 Benzo[g/hitoranthene g/m³ - <0.003 <0.003 <0.003 Benzo[g/hitoranthene g/m³ - <0.003 <0.003 <0.003 Benzo[g/hitoranthene g/m³ - <0.003 <0.003 <0.003 Benzo[g/hitoranthene g/m³ - <0.003 <0.003 <0.003 Benzo[g/hitoranthene g/m³ - <0.003 <0.003 <0.003 Benzo[g/hitoranthene g/m³ - <0.003 <0.003 <0.003 Benzo[g/hitoranthene g/m³ - <0.003 <0.003 <0.003 Benzo[g/hitoranthene g/m³ - <0.003 <0.003 <0.003 Benzo[g/hitoranthene g/m³ - <0.003 <0.003 <0.003 <0.003 Benzo[g/hitoranthene g/m³ - <0.003 <0.003 <0.003 <0.003 Benzo[g/hitoranthene g/m³ - <0.005 <0.005 <0.005 <0.005 Benzo[g/hitoranthene g/m³ - <0.005 <0.005 <0.005 <0.005 Benzo[g/hitoranthene g/m³ - <0.005 <0.005 <0.005 <0.005 Benzo[g/hitoranthene g/m³ - <0.005 <0.005 <0	Endosulfan II	g/m³	-	< 0.010	-	< 0.010	< 0.010
Endrin ketone g/m³ - < <0.010 - < <0.010 < <0.010 Heptachlor g/m³ - < <0.005 - < <0.005 < <0.005	Endosulfan sulphate	g/m³	-	< 0.010	-	< 0.010	< 0.010
Heptachlor gym³ - < < 0.005 - < 0.005 < < 0.005 Heptachlor gym³ - < < 0.005 - < 0.005 < < 0.005 Heptachlor epoxide gym³ - < < 0.005 - < < 0.005 < < 0.005 < < 0.005 < < 0.005 Heptachlor epoxide gym³ - < < 0.005 - < < 0.005 < < 0.005 < < 0.005 < < 0.005 < < 0.005 Heptachlor epoxide gym³ - < < 0.005 - < < 0.005 < < 0.005 < < 0.005 < < 0.005 < < 0.005 < < 0.005 < < 0.005 < < 0.005 < < 0.005 < < 0.005 < < 0.005 < < 0.005 < < 0.005 < < 0.005 < < 0.005 < < 0.005 < < 0.005 < < 0.005 < < 0.005 < < 0.005 < < 0.005 < < 0.005 < < 0.005 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.003 < < 0.00	Endrin	g/m³	-	< 0.010	-	< 0.010	< 0.010
Heptachlor epoxide	Endrin ketone	g/m³	-	< 0.010	-	< 0.010	< 0.010
Hexachlorobenzene g/m³ - < 0.005 - < 0.005 < 0.005 < 0.005	Heptachlor	g/m³	-	< 0.005	-	< 0.005	< 0.005
Polycyclic Aromatic Hydrocarbons in SVOC Water Samples by GC-MS Acenaphthene g/m³ - < 0.003 - < 0.003 < 0.003 Acenaphthylene g/m³ - < 0.003 - < 0.003 < 0.003 Anthracene g/m³ - < 0.003 - < 0.003 < 0.003 Anthracene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[a]anthracene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[a]pyrene (BAP) g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[a]pyrene (BAP) g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[a]pyrene (BAP) g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[a]pyrene (BAP) g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[a]fluoranthene + Benzo[j] g/m³ - < 0.003 - < 0.003 - < 0.003 < 0.003 Benzo[a]fluoranthene g/m³ - < 0.003 - < 0.003 - < 0.003 < 0.003 Benzo[a]fluoranthene g/m³ - < 0.003 - < 0.003 - < 0.003 < 0.003 Benzo[a]fluoranthene g/m³ - < 0.003 - < 0.003 - < 0.003 < 0.003 Benzo[a]fluoranthene g/m³ - < 0.003 - < 0.003 - < 0.003 - < 0.003 Benzo[a]halnthracene g/m³ - < 0.003 - < 0.003 - < 0.003 - < 0.003 Fluoranthene g/m³ - < 0.003 - < 0.003 - < 0.003 Fluoranthene g/m³ - < 0.003 - < 0.003 - < 0.003 Fluorene g/m³ - < 0.003 - < 0.003 - < 0.003 Fluorene g/m³ - < 0.003 - < 0.003 - < 0.003 Fluorene g/m³ - < 0.003 - < 0.003 - < 0.003 Phenolin g/m³ - < 0.003 - < 0.003 - < 0.003 Phenolin g/m³ - < 0.003 - < 0.003 - < 0.003 Phenolin g/m³ - < 0.003 - < 0.003 - < 0.003 Phenolin g/m³ - < 0.003 - < 0.003 - < 0.003 Phenolin g/m³ - < 0.006 - < 0.003 - < 0.003 Phenolin in SVOC Water Samples by GC-MS 4-Chloro-3-methylphenol g/m³ - < 0.005 - < 0.005 - < 0.005 2,4-Dichlorophenol g/m³ - < 0.005 - < 0.005 - < 0.005 2,4-Dichlorophenol g/m³ - < 0.005 - < 0.005 - < 0.005 2,4-Dichlorophenol g/m³ - < 0.006 - < 0.005 - < 0.005 2,4-Diethylphenol (m-+ p-cresol) g/m³ - < 0.001 - < 0.010 - < 0.010 Pentachlorophenol (PCP) g/m³ - < 0.010 - < 0.010 - < 0.010 Pentachlorophenol (PCP) g/m³ - < 0.010 - < 0.010 - < 0.010 - < 0.010 Pentachlorophenol (PCP) g/m³ - < 0.010 - < 0.010 - < 0.010 - < 0.010	Heptachlor epoxide	g/m³	-	< 0.005	-	< 0.005	< 0.005
Acenaphthene g/m³ - <0.003 - <0.003 <0.003 Acenaphthylene g/m³ - <0.003 - <0.003 <0.003 Anthracene g/m³ - <0.003 - <0.003 <0.003 Anthracene g/m³ - <0.003 - <0.003 <0.003 Benzo[a]anthracene g/m³ - <0.003 - <0.003 <0.003 Benzo[a]pryene (BAP) g/m³ - <0.003 - <0.003 <0.003 Benzo[b]fluoranthene + Benzo[j] g/m³ - <0.003 - <0.003 <0.003 Benzo[b]fluoranthene + Benzo[j] g/m³ - <0.003 - <0.003 <0.003 Benzo[b]fluoranthene g/m³ - <0.003 - <0.003 <0.003 Benzo[b]fluoranthene g/m³ - <0.003 - <0.003 <0.003 Benzo[b]fluoranthene g/m³ - <0.003 - <0.003 <0.003 Benzo[b]fluoranthene g/m³ - <0.003 - <0.003 <0.003 Benzo[b]fluoranthene g/m³ - <0.003 - <0.003 <0.003 Benzo[b]fluoranthene g/m³ - <0.003 - <0.003 <0.003 Benzo[b]fluoranthene g/m³ - <0.003 - <0.003 <0.003 Fluoranthene g/m³ - <0.003 - <0.003 <0.003 Fluoranthene g/m³ - <0.003 - <0.003 <0.003 Fluorene g/m³ - <0.003 - <0.003 <0.003 Fluorene g/m³ - <0.003 - <0.003 <0.003 Pluoranthene g/m³ - <0.005 - <0.003 <0.003 Pluoranthene g/m³ - <0.005 - <0.005 <0.005 Pluoranthene g/m³ - <0.005 - <0.005 <0.005 Pluoranthene g/m³ - <0.005 - <0.005 <0.005 2,4-Dichlorophenol g/m³ - <0.005 - <0.005 <0.005 2,4-Direnthylphenol (m-+ p-cresol) g/m³ - <0.005 - <0.005 <0.005 2,4-Direnthylphenol (m-+ p-cresol) g/m³ - <0.001 - <0.010 <0.010 Pentachlorophenol (PCP) g/m³ - <0.010 - <0.010 <0.010 Pentachlorophenol (PCP) g/m³ - <0.010 - <0.010 <0.010 Pentachlorophenol (PCP) g/m³ - <0.010 - <0.010 <0.010 Pluoranthene g/m³ - <0.010 - <0.010 <0.010 Pluoranthene g/m³ - <0.010 - <0.010 - <0.010 Pluoranthene g/m³ - <0.010 - <0.010 Pluoranthene g/m³ - <0.005 - <0.010 - <0.010 Pluoranthene g/m³ - <0.005 - <0.010 - <0.010 Pluoranthene g/m³ - <	Hexachlorobenzene	g/m³	-	< 0.005	-	< 0.005	< 0.005
Acenaphthylene g/m³ - < 0.003 - < 0.003 < 0.003 Anthracene g/m³ - < 0.003 - < 0.003 < 0.003 Anthracene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[a]anthracene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[a]pyrene (BAP) g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[b]fluoranthene + Benzo[j] g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[b]fluoranthene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[b]fluoranthene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[b]fluoranthene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[b]fluoranthene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[b]fluoranthene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[b]fluoranthene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[b]fluoranthene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[b]fluoranthene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[b]fluoranthene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[b]fluoranthene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[b]fluoranthene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[b]fluoranthene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[b]fluoranthene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[b]fluoranthene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[b]fluoranthene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[b]fluoranthene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[b]fluoranthene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[b]fluoranthene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[b]fluoranthene g/m³ - < 0.003 - < 0.003 < 0.003 Benzo[b]fluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Benzo[b]fluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Benzo[b]fluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Benzo[b]fluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Benzo[b]fluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Benzo[b]fluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Benzo[b]fluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Benzo[b]fluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Benzo[b]fluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Benzo[b]fluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Benzo[b]fluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Benzo[b]fluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Benzo[b]fluoranthene g/m³ - < 0.0005 - < 0.005 < 0.005 Benzo[b]fl	Polycyclic Aromatic Hydrocarbons in	SVOC Wate	er Samples by GC-I	MS			
Anthracene g/m³ - < < 0.003 - < < 0.003 < < 0.003 Benzo[a]anthracene g/m³ - < < 0.003 - < < 0.003 < < 0.003 Benzo[a]anthracene g/m³ - < < 0.003 - < < 0.003 < < 0.003 Benzo[a]pyrene (BAP) g/m³ - < < 0.003 - < < 0.003 < < 0.003 Benzo[b]fluoranthene + Benzo[j] g/m³ - < < 0.003 - < < 0.003 < < 0.003 Benzo[g,h,i]perylene g/m³ - < < 0.003 - < < 0.003 < < 0.003 Benzo[g,h,i]perylene g/m³ - < < 0.003 - < < 0.003 < < 0.003 Benzo[g,h,i]perylene g/m³ - < < 0.003 - < < 0.003 < < 0.003 Benzo[g,h,i]perylene g/m³ - < < 0.003 - < < 0.003 < < 0.003 Benzo[g,h,i]perylene g/m³ - < < 0.003 - < < 0.003 < < 0.003 Chrysene g/m³ - < < 0.003 - < < 0.003 < < 0.003 Chrysene g/m³ - < < 0.003 - < < 0.003 < < 0.003 Chrysene g/m³ - < < 0.003 - < < 0.003 < < 0.003 Fluoranthene g/m³ - < < 0.003 - < < 0.003 < < 0.003 Fluoranthene g/m³ - < < 0.003 - < < 0.003 < < 0.003 Fluoranthene g/m³ - < < 0.003 - < < 0.003 < < 0.003 Pluoranthene g/m³ - < < 0.003 - < < 0.003 < < 0.003 Pluoranthene g/m³ - < < 0.003 - < 0.003 < < 0.003 Pluoranthene g/m³ - < < 0.003 - < 0.003 < < 0.003 Pluoranthene g/m³ - < < 0.003 - < 0.003 < < 0.003 Pluoranthene g/m³ - < < 0.003 - < 0.003 < < 0.003 Pluoranthene g/m³ - < < 0.003 - < 0.003 < < 0.003 Pluoranthene g/m³ - < 0.005 - < 0.003 < < 0.003 Pluoranthene g/m³ - < 0.005 - < 0.003 < 0.003 Pluoranthene g/m³ - < 0.005 - < 0.003 < 0.003 Pluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Pluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Pluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Pluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Pluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Pluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Pluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Pluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Pluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Pluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Pluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Pluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Pluoranthene g/m³ - < 0.005 - < 0.005 < 0.005 Pluoranthene g/m³ - < 0.005 - < 0	Acenaphthene	g/m³	-	< 0.003	-	< 0.003	< 0.003
Benzo[a]anthracene g/m³ - < 0.003	Acenaphthylene	g/m³	-	< 0.003	-	< 0.003	< 0.003
Benzo[a]pyrene (BAP) g/m³ - < 0.003	Anthracene	g/m³	-	< 0.003	-	< 0.003	< 0.003
Benzo[b]fluoranthene + Benzo[j] g/m³ - < 0.003 - < 0.003 < 0.003	Benzo[a]anthracene	g/m³	-	< 0.003	-	< 0.003	< 0.003
Benzolg,h,i]perylene	Benzo[a]pyrene (BAP)	g/m³	-	< 0.003	-	< 0.003	< 0.003
Benzokkiftuoranthene g/m³ - < 0.003 - < 0.003 < 0.003 1&2-Chloronaphthalene g/m³ - < 0.003	Benzo[b]fluoranthene + Benzo[j] fluoranthene	g/m³	-	< 0.003	-	< 0.003	< 0.003
18.2-Chloronaphthalene g/m³ -	Benzo[g,h,i]perylene	g/m³	-	< 0.003	-	< 0.003	< 0.003
Chrysene g/m³ - < 0.003 - < 0.003 < 0.003 Dibenzo[a,h]anthracene g/m³ - < 0.003	Benzo[k]fluoranthene	g/m³	-	< 0.003	-	< 0.003	< 0.003
Dibenzo[a,h]anthracene g/m³ - < 0.003 - < 0.003 < 0.003 Fluoranthene g/m³ - < 0.003	1&2-Chloronaphthalene	g/m³	-	< 0.003	-	< 0.003	< 0.003
Fluoranthene g/m³ - < < 0.003 - < < 0.003 < < 0.003 Fluorene g/m³ - < < 0.003 - < < 0.003 < < 0.003 Indeno(1,2,3-c,d)pyrene g/m³ - < < 0.003 - < < 0.003 < < 0.003 2-Methylnaphthalene g/m³ - < 0.023 - < < 0.003 < < 0.003 Naphthalene g/m³ - < 0.065 - < < 0.003 < < 0.003 Phenanthrene g/m³ - < < 0.003 - < < 0.003 < < 0.003 Pyrene g/m³ - < < 0.003 - < < 0.003 < < 0.003 Phenols in SVOC Water Samples by GC-MS 4-Chloro-3-methylphenol g/m³ - < < 0.005 - < < 0.005 - < < 0.005 < < 0.005 2-4-Dichlorophenol g/m³ - < < 0.005 - < < 0.005 - < < 0.005 < < 0.005 2,4-Dimethylphenol g/m³ - < < 0.005 - < < 0.005 < < 0.005 3 & 4-Methylphenol (m- + p-cresol) g/m³ - < < 0.010 - < < 0.010 < < 0.010 2-Methylphenol (o-Cresol) g/m³ - < < 0.005 - < < 0.005 < < 0.005 2-Nitrophenol g/m³ - < < 0.005 - < < 0.005 < < 0.005 2-Nitrophenol (PCP) g/m³ - < < 0.010 - < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010 < < 0.010	Chrysene	g/m³	-	< 0.003	-	< 0.003	< 0.003
Fluorene g/m³ - <0.003 - <0.003 <0.003 Indeno(1,2,3-c,d)pyrene g/m³ - <0.003 - <0.003 <0.003 2-Methylnaphthalene g/m³ - 0.023 - <0.003 <0.003 Naphthalene g/m³ - 0.065 - <0.003 <0.003 Phenanthrene g/m³ - <0.003 - <0.003 <0.003 Pyrene g/m³ - <0.003 - <0.003 <0.003 Phenols in SVOC Water Samples by GC-MS 4-Chloro-3-methylphenol g/m³ - <0.005 - <0.005 <0.005 2,4-Dichlorophenol g/m³ - <0.005 - <0.005 <0.005 2,4-Dimethylphenol g/m³ - <0.005 - <0.005 <0.005 3 & 4-Methylphenol (m-+p-cresol) g/m³ - <0.005 - <0.005 <0.005 2-Methylphenol (o-Cresol) g/m³ - <0.005 - <0.005 <0.005 2-Nitrophenol g/m³ - <0.005 - <0.005 <0.005 2-Nitrophenol g/m³ - <0.005 - <0.005 <0.005 2-Nitrophenol g/m³ - <0.005 - <0.005 <0.005 2-Nitrophenol g/m³ - <0.005 - <0.005 <0.005 2-Nitrophenol g/m³ - <0.0005 - <0.005 <0.005 2-Nitrophenol g/m³ - <0.0010 - <0.010 <0.010 Pentachlorophenol (PCP) g/m³ - <0.010 - <0.010 <0.010	Dibenzo[a,h]anthracene		-	< 0.003	-	< 0.003	< 0.003
Indeno(1,2,3-c,d)pyrene g/m³ -	Fluoranthene		-		-		
2-Methylnaphthalene g/m³ - 0.023 - <0.003 <0.003 Naphthalene g/m³ - 0.065 - <0.003 <0.003 Phenanthrene g/m³ - <0.003 - <0.003 <0.003 Pyrene g/m³ - <0.003 - <0.003 <0.003 Phenals in SVOC Water Samples by GC-MS 4-Chloro-3-methylphenol g/m³ - <0.010 - <0.010 <0.010 2-Chlorophenol g/m³ - <0.005 - <0.005 <0.005 2,4-Dichlorophenol g/m³ - <0.005 - <0.005 <0.005 2,4-Dimethylphenol g/m³ - <0.005 - <0.005 <0.005 3 & 4-Methylphenol (m- + p-cresol) g/m³ - <0.010 - <0.010 <0.010 2-Methylphenol (o-Cresol) g/m³ - <0.005 - <0.005 <0.005 2-Nitrophenol g/m³ - <0.010 - <0.010 <0.010 Pentachlorophenol (PCP) g/m³ - <0.010 - <0.010 <0.010	Fluorene	g/m³	-	< 0.003	-	< 0.003	< 0.003
Naphthalene g/m³ - 0.065 - < 0.003 < 0.003 Phenanthrene g/m³ - < 0.003	Indeno(1,2,3-c,d)pyrene	g/m³	-	< 0.003	-	< 0.003	< 0.003
Phenanthrene g/m³ - <0.003 - <0.003 <0.003 Pyrene g/m³ - <0.003 - <0.003 <0.003 Phenols in SVOC Water Samples by GC-MS 4-Chloro-3-methylphenol g/m³ - <0.010 - <0.010 <0.010 2-Chlorophenol g/m³ - <0.005 - <0.005 <0.005 <0.005 2,4-Dichlorophenol g/m³ - <0.005 - <0.005 <0.005 <0.005 2,4-Dimethylphenol g/m³ - <0.005 - <0.005 <0.005 <0.005 3 & 4-Methylphenol (m- + p-cresol) g/m³ - <0.010 - <0.010 <0.010 2-Methylphenol (o-Cresol) g/m³ - <0.005 - <0.005 <0.005 2-Nitrophenol g/m³ - <0.010 - <0.010 <0.010 Pentachlorophenol (PCP) g/m³ - <0.010 - <0.010 <0.010	2-Methylnaphthalene	g/m³	-		-	< 0.003	< 0.003
Pyrene g/m³ - < 0.003 - < 0.003 < 0.003 Phenols in SVOC Water Samples by GC-MS 4-Chloro-3-methylphenol g/m³ - < 0.010	Naphthalene	g/m³	-	0.065	-	< 0.003	< 0.003
Phenols in SVOC Water Samples by GC-MS 4-Chloro-3-methylphenol g/m³ - < 0.010 - < 0.010 < 0.010 2-Chlorophenol g/m³ - < 0.005 - < 0.005 < 0.005 2,4-Dichlorophenol g/m³ - < 0.005 - < 0.005 < 0.005 2,4-Dimethylphenol g/m³ - < 0.005 - < 0.005 < 0.005 3 & 4-Methylphenol (m- + p-cresol) g/m³ - < 0.010 - < 0.010 < 0.010 2-Methylphenol (o-Cresol) g/m³ - < 0.005 - < 0.005 < 0.005 2-Nitrophenol g/m³ - < 0.010 - < 0.010 < 0.010 Pentachlorophenol (PCP) g/m³ - < 0.10 - < 0.10 < 0.10	Phenanthrene	g/m³	-	< 0.003	-	< 0.003	< 0.003
4-Chloro-3-methylphenol g/m³ - < 0.010	Pyrene	g/m ³	-	< 0.003	-	< 0.003	< 0.003
2-Chlorophenol g/m³ - < 0.005	Phenols in SVOC Water Samples by	GC-MS					
2,4-Dichlorophenol g/m³ - < 0.005	4-Chloro-3-methylphenol	g/m ³	-	< 0.010	-	< 0.010	< 0.010
2,4-Dimethylphenol g/m³ - < 0.005	2-Chlorophenol	g/m³	-		-	< 0.005	< 0.005
3 & 4-Methylphenol (m- + p-cresol) g/m³ - < 0.010 - < 0.010 < 0.010 2-Methylphenol (o-Cresol) g/m³ - < 0.005 - < 0.005 2-Nitrophenol g/m³ - < 0.010 - < 0.010 < 0.010 Pentachlorophenol (PCP) g/m³ - < 0.10 - < 0.10 < 0.10	2,4-Dichlorophenol	g/m³	-	< 0.005	-	< 0.005	< 0.005
2-Methylphenol (o-Cresol) g/m³ - < 0.005	2,4-Dimethylphenol	g/m³	-	< 0.005	-	< 0.005	< 0.005
2-Nitrophenol g/m^3 - < 0.010 - < 0.010 < 0.010 Pentachlorophenol (PCP) g/m^3 - < 0.10 - < 0.10 - < 0.10	3 & 4-Methylphenol (m- + p-cresol)	g/m³	-	< 0.010	-	< 0.010	< 0.010
Pentachlorophenol (PCP) g/m³ - < 0.10 - < 0.10 < 0.10	2-Methylphenol (o-Cresol)	g/m³	-	< 0.005	-	< 0.005	< 0.005
1 1 1	2-Nitrophenol	g/m³	-	< 0.010	-	< 0.010	< 0.010
Phenol g/m³ - < 0.010 - < 0.010 < 0.010	Pentachlorophenol (PCP)	g/m³	-	< 0.10	-	< 0.10	< 0.10
	Phenol	g/m³	-	< 0.010	-	< 0.010	< 0.010

	Sample Name:	BH06_01	BH14_01	BH51_01	BH44_01	BH46_02
		26-Sep-2024 12:40 pm	26-Sep-2024 11:50 am	26-Sep-2024 11:00 am	26-Sep-2024 2:50 pm	26-Sep-2024 2:25 pm
	Lab Number:	3680726.1	3680726.2	3680726.3	3680726.4	3680726.5
Phenols in SVOC Water Sam						
2,4,5-Trichlorophenol	g/m³	_	< 0.010	-	< 0.010	< 0.010
2,4,6-Trichlorophenol	g/m³	-	< 0.010	-	< 0.010	< 0.010
Plasticisers in SVOC Water S	Samples by GC-MS					I .
Bis(2-ethylhexyl)phthalate	g/m³	-	< 0.03	-	< 0.03	< 0.03
Butylbenzylphthalate	g/m³	-	< 0.010	-	< 0.010	< 0.010
Di(2-ethylhexyl)adipate	g/m³	-	< 0.005	-	< 0.005	< 0.005
Diethylphthalate	g/m³	-	< 0.010	-	< 0.010	< 0.010
Dimethylphthalate	g/m³	-	< 0.010	-	< 0.010	< 0.010
Di-n-butylphthalate	g/m³	-	< 0.010	-	< 0.010	< 0.010
Di-n-octylphthalate	g/m³	-	< 0.010	-	< 0.010	< 0.010
Other Halogenated compound	ds in SVOC Water S	Samples by GC-MS				
1,2-Dichlorobenzene	g/m³	-	< 0.010	-	< 0.010	< 0.010
1,3-Dichlorobenzene	g/m³	-	< 0.010	-	< 0.010	< 0.010
1,4-Dichlorobenzene	g/m³	-	< 0.010	-	< 0.010	< 0.010
Hexachlorobutadiene	g/m³	-	< 0.010	-	< 0.010	< 0.010
Hexachloroethane	g/m³	-	< 0.010	-	< 0.010	< 0.010
1,2,4-Trichlorobenzene	g/m³	-	< 0.005	-	< 0.005	< 0.005
Other compounds in SVOC V	Vater Samples by G	C-MS				
Benzyl alcohol	g/m³	-	< 0.05	-	< 0.05	< 0.05
Carbazole	g/m³	-	< 0.005	-	< 0.005	< 0.005
Dibenzofuran	g/m³	-	< 0.005	-	< 0.005	< 0.005
Isophorone	g/m³	-	< 0.005	-	< 0.005	< 0.005
Total Petroleum Hydrocarbon	s in Water					
C7 - C9	g/m³	-	0.62	-	< 0.10	< 0.10
C10 - C14	g/m³	-	1.1	-	< 0.2	< 0.2
C15 - C36	g/m³	-	< 0.4	-	< 0.4	< 0.4
Total hydrocarbons (C7 - C36	g/m ³	-	1.8	-	< 0.7	< 0.7
	Sample Name:		BH10	_01 26-Sep-2024 4	:00 pm	
	Lab Number:			3680726.6		
Individual Tests						
Total Suspended Solids	g/m³			480		
Heavy metals, dissolved, trace		o,Zn				
Dissolved Arsenic	g/m³			< 0.0010		
Dissolved Cadmium	g/m³			< 0.00005		
Dissolved Chromium	g/m³			< 0.0005		
Dissolved Copper	g/m³			< 0.0005		
Dissolved Lead	g/m³			< 0.00010		
Dissolved Nickel	g/m³			0.0013		
Dissolved Zinc	g/m³			0.0115		



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 Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Aqueous			
Test	Method Description	Default Detection Limit	Sample No
Individual Tests			1
Total Suspended Solids	Filtration using Whatman 934 AH, Advantec GC-50 or equivalent filters (nominal pore size 1.2 - 1.5µm), gravimetric determination. APHA 2540 D (modified) : Online Edition.	3 g/m³	1-3, 5-6
Filtration for dissolved metals analysis	Sample filtration through 0.45µm membrane filter and preservation with nitric acid. APHA 3030 B: Online Edition.	-	1-6
Heavy metals, dissolved, trace As,Cd,Cr,Cu,Ni,Pb,Zn	0.45µm Filtration, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.00005 - 0.0010 g/m ³	1-6
Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq	Liquid / liquid extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.00010 - 0.0005 g/m ³	1-2, 4-5
Semivolatile Organic Compounds Screening in Water by GC-MS	Liquid / liquid extraction, GC-MS analysis. In-house based on US EPA 8270.	0.003 - 0.10 g/m ³	2, 4-5
Total Petroleum Hydrocarbons in Water	•		
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.10 g/m ³	2, 4-5
C10 - C14	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.2 g/m ³	2, 4-5
C15 - C36	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.4 g/m ³	2, 4-5
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	0.7 g/m ³	2, 4-5

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

Testing was completed between 01-Oct-2024 and 04-Oct-2024. 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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Ara Heron BSc (Tech)



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 ⊕ www.hill-labs.co.nz

Certificate of Analysis

Page 1 of 2

SPv1

Client: Contact: Aurecon New Zealand Limited

ntact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149

 Lab No:
 3683704

 Date Received:
 01-Oct-2024

 Date Reported:
 07-Oct-2024

Quote No: 126272

Order No:

Client Reference: 521290-064 Submitted By: 521290-064

Sample Type: Aqueous					
	Sample Name:	BH17_01 30-Sep-2024	BH25_01 30-Sep-2024	BH38_01 30-Sep-2024	BH36_01 30-Sep-2024
	Lab Number:	3683704.1	3683704.2	3683704.3	3683704.4
Individual Tests					
Total Suspended Solids	g/m³	30	36	2,700	15,100
Heavy metals, dissolved, trace	As,Cd,Cr,Cu,Ni,P	b,Zn			
Dissolved Arsenic	g/m³	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Dissolved Cadmium	g/m ³	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Dissolved Chromium	g/m³	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Dissolved Copper	g/m³	0.0005	0.0006	0.0024	< 0.0005
Dissolved Lead	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Dissolved Nickel	g/m³	< 0.0005	0.0017	0.0096	0.0055
Dissolved Zinc	g/m³	0.0024	0.0098	0.0135	0.023
Polycyclic Aromatic Hydrocart	oons Screening in \	Water, By Liq/Liq			
Acenaphthene	g/m³	-	< 0.00010	< 0.00010	< 0.00010
Acenaphthylene	g/m³	-	< 0.00010	< 0.00010	< 0.00010
Anthracene	g/m³	-	< 0.00010	< 0.00010	< 0.00010
Benzo[a]anthracene	g/m³	-	< 0.00010	< 0.00010	< 0.00010
Benzo[a]pyrene (BAP)	g/m³	-	< 0.00010	< 0.00010	< 0.00010
Benzo[b]fluoranthene + Benzo fluoranthene	[j] g/m ³	-	< 0.00010	< 0.00010	< 0.00010
Benzo[g,h,i]perylene	g/m³	-	< 0.00010	< 0.00010	< 0.00010
Benzo[k]fluoranthene	g/m³	-	< 0.00010	< 0.00010	< 0.00010
Chrysene	g/m³	-	< 0.00010	< 0.00010	< 0.00010
Dibenzo[a,h]anthracene	g/m³	-	< 0.00010	< 0.00010	< 0.00010
Fluoranthene	g/m³	-	< 0.00010	< 0.00010	< 0.00010
Fluorene	g/m³	-	< 0.0002	< 0.0002	< 0.0002
Indeno(1,2,3-c,d)pyrene	g/m³	-	< 0.00010	< 0.00010	< 0.00010
Naphthalene	g/m³	-	< 0.0005	< 0.0005	< 0.0005
Phenanthrene	g/m³	-	< 0.0004	< 0.0004	< 0.0004
Pyrene	g/m³	-	< 0.0002	< 0.0002	< 0.0002
Total Petroleum Hydrocarbons	s in Water				
C7 - C9	g/m³	-	-	< 0.10	< 0.10
C10 - C14	g/m³	-	-	< 0.2	< 0.2
C15 - C36	g/m³	-	-	< 0.4	< 0.4
Total hydrocarbons (C7 - C36) g/m ³	-	-	< 0.7	< 0.7





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 Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Aqueous			
Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Total Suspended Solids	Filtration using Whatman 934 AH, Advantec GC-50 or equivalent filters (nominal pore size 1.2 - 1.5µm), gravimetric determination. APHA 2540 D (modified) : Online Edition.	3 g/m ³	1-4
Filtration for dissolved metals analysis	Sample filtration through 0.45µm membrane filter and preservation with nitric acid. APHA 3030 B: Online Edition.	-	1-4
Heavy metals, dissolved, trace As,Cd,Cr,Cu,Ni,Pb,Zn	0.45µm Filtration, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.00005 - 0.0010 g/m ³	1-4
Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq	Liquid / liquid extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.00010 - 0.0005 g/m ³	2-4
Total Petroleum Hydrocarbons in Water			1
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.10 g/m ³	3-4
C10 - C14	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.2 g/m ³	3-4
C15 - C36	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.4 g/m ³	3-4
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	0.7 g/m ³	3-4

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

Testing was completed between 02-Oct-2024 and 07-Oct-2024. 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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Ara Heron BSc (Tech)



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 ⊕ www.hill-labs.co.nz

Certificate of Analysis

Page 1 of 4

SPv1

Client:

Aurecon New Zealand Limited

Contact: H

Hannah Sussex C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149

 Lab No:
 3690956

 Date Received:
 10-Oct-2024

 Date Reported:
 17-Oct-2024

 Quote No:
 126272

Order No:

Client Reference: 521290-064

Add. Client Ref: Sampled 10/10/24
Submitted By: Hannah Sussex

				omittod by:	Tiailiaii Gacc	O/L
Sample Type: Aqueous	;					
	Sample Name:	BH14-01 10-Oct-2024	BH14A-02 10-Oct-2024	BH14B-03 10-Oct-2024	BH14C-04 10-Oct-2024	BH39-01 10-Oct-2024
	Lab Number:	3690956.1	3690956.2	3690956.3	3690956.4	3690956.5
Individual Tests	<u>.</u>					
Total Suspended Solids	g/m³	7,100	3,100	< 3	< 3	123
Heavy metals, dissolved, trace	e As,Cd,Cr,Cu,Ni,Pt	,Zn	1	'	1	1
Dissolved Arsenic	g/m³	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Dissolved Cadmium	g/m³	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Dissolved Chromium	g/m³	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Dissolved Copper	g/m³	0.0021	0.0019	< 0.0005	< 0.0005	0.0008
Dissolved Lead	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Dissolved Nickel	g/m³	0.0007	0.0010	< 0.0005	< 0.0005	0.0045
Dissolved Zinc	g/m³	0.0034	0.0043	< 0.0010	< 0.0010	0.0097
Polycyclic Aromatic Hydrocar	bons Screening in W	/ater, By Liq/Liq				
Acenaphthene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Acenaphthylene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Anthracene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Benzo[a]anthracene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Benzo[a]pyrene (BAP)	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Benzo[b]fluoranthene + Benzo fluoranthene	p[j] g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Benzo[g,h,i]perylene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Benzo[k]fluoranthene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Chrysene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Dibenzo[a,h]anthracene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Fluoranthene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Fluorene	g/m³	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Indeno(1,2,3-c,d)pyrene	g/m³	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Naphthalene	g/m³	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Phenanthrene	g/m³	< 0.0004	< 0.0004	< 0.0004	< 0.0004	< 0.0004
Pyrene	g/m³	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Haloethers in SVOC Water S	amples by GC-MS					
Bis(2-chloroethoxy) methane	g/m³	< 0.005	-	-	-	< 0.005
Bis(2-chloroethyl)ether	g/m³	< 0.005	-	-	-	< 0.005
Bis(2-chloroisopropyl)ether	g/m³	< 0.005	-	-	-	< 0.005
4-Bromophenyl phenyl ether	g/m³	< 0.005	-	-	-	< 0.005
4-Chlorophenyl phenyl ether	g/m³	< 0.005	-	-	-	< 0.005





Sample Type: Aqueous						
Samp	le Name:	BH14-01	BH14A-02	BH14B-03	BH14C-04	BH39-01
Lab	Nivers Is a re-	10-Oct-2024 3690956.1	10-Oct-2024	10-Oct-2024	10-Oct-2024	10-Oct-2024
Nitrogen containing compounds in S	Number:		3690956.2	3690956.3	3690956.4	3690956.5
2.4-Dinitrotoluene	g/m ³	< 0.010		_	_	< 0.010
2,6-Dinitrotoluene	g/m³	< 0.010	_	_	_	< 0.010
Nitrobenzene	g/m³	< 0.005	_	_	_	< 0.005
N-Nitrosodi-n-propylamine	g/m³	< 0.003	-	-	-	< 0.005
N-Nitrosodiphenylamine +	g/m³	< 0.010	_	_	_	< 0.010
Diphenylamine*	9/1115	< 0.010	-	-	-	< 0.010
Organochlorine Pesticides in SVOC	Water Samp	les by GC-MS	1	1	1	
Aldrin	g/m³	< 0.005	-	-	-	< 0.005
alpha-BHC	g/m³	< 0.005	-	-	-	< 0.005
beta-BHC	g/m³	< 0.005	-	-	-	< 0.005
delta-BHC	g/m³	< 0.005	-	-	-	< 0.005
gamma-BHC (Lindane)	g/m³	< 0.005	-	-	-	< 0.005
4,4'-DDD	g/m³	< 0.005	-	-	-	< 0.005
4,4'-DDE	g/m³	< 0.005	-	-	-	< 0.005
4,4'-DDT	g/m³	< 0.010	-	-	-	< 0.010
Dieldrin	g/m³	< 0.005	-	-	-	< 0.005
Endosulfan I	g/m³	< 0.010	-	-	-	< 0.010
Endosulfan II	g/m³	< 0.010	-	-	-	< 0.010
Endosulfan sulphate	g/m³	< 0.010	-	-	-	< 0.010
Endrin	g/m³	< 0.010	-	-	-	< 0.010
Endrin ketone	g/m³	< 0.010	-	-	-	< 0.010
Heptachlor	g/m³	< 0.005	-	-	-	< 0.005
Heptachlor epoxide	g/m³	< 0.005	-	-	-	< 0.005
Hexachlorobenzene	g/m³	< 0.005	-	-	-	< 0.005
Polycyclic Aromatic Hydrocarbons in	SVOC Wate	er Samples by GC-l	MS			
Acenaphthene	g/m³	< 0.003	-	-	-	< 0.003
Acenaphthylene	g/m³	< 0.003	-	-	-	< 0.003
Anthracene	g/m³	< 0.003	-	-	-	< 0.003
Benzo[a]anthracene	g/m³	< 0.003	-	-	-	< 0.003
Benzo[a]pyrene (BAP)	g/m³	< 0.003	-	-	-	< 0.003
Benzo[b]fluoranthene + Benzo[j] fluoranthene	g/m³	< 0.003	-	-	-	< 0.003
Benzo[g,h,i]perylene	g/m³	< 0.003	-	-	-	< 0.003
Benzo[k]fluoranthene	g/m³	< 0.003	-	-	-	< 0.003
1&2-Chloronaphthalene	g/m³	< 0.003	-	-	-	< 0.003
Chrysene	g/m³	< 0.003	-	-	-	< 0.003
Dibenzo[a,h]anthracene	g/m³	< 0.003	-	-	-	< 0.003
Fluoranthene	g/m³	< 0.003	-	-	-	< 0.003
Fluorene	g/m³	< 0.003	-	-	-	< 0.003
Indeno(1,2,3-c,d)pyrene	g/m³	< 0.003	-	-	-	< 0.003
2-Methylnaphthalene	g/m³	< 0.003	-	-	-	< 0.003
Naphthalene	g/m³	< 0.003	-	-	-	< 0.003
Phenanthrene	g/m³	< 0.003	-	-	-	< 0.003
Pyrene	g/m³	< 0.003	-	-	-	< 0.003
Phenols in SVOC Water Samples by	GC-MS					
4-Chloro-3-methylphenol	g/m³	< 0.010	-	-	-	< 0.010
2-Chlorophenol	g/m³	< 0.005	-	-	-	< 0.005
2,4-Dichlorophenol	g/m³	< 0.005	-	-	-	< 0.005
2,4-Dimethylphenol	g/m³	< 0.005	-	-	-	< 0.005
3 & 4-Methylphenol (m- + p-cresol)	g/m³	< 0.010	-	-	-	< 0.010
2-Methylphenol (o-Cresol)	g/m³	< 0.005	-	-	-	< 0.005
2-Nitrophenol	g/m³	< 0.010	-	-	-	< 0.010
Pentachlorophenol (PCP)	g/m³	< 0.10	-	-	-	< 0.10
Phenol	g/m³	< 0.010	-	-	-	< 0.010
2,4,5-Trichlorophenol	g/m³	< 0.010	-	-	-	< 0.010

Sample Type: Aqueou	S					
	Sample Name:	BH14-01 10-Oct-2024	BH14A-02 10-Oct-2024	BH14B-03 10-Oct-2024	BH14C-04 10-Oct-2024	BH39-01 10-Oct-2024
	Lab Number:	3690956.1	3690956.2	3690956.3	3690956.4	3690956.5
Phenols in SVOC Water Sar	mples by GC-MS					
2,4,6-Trichlorophenol	g/m³	< 0.010	-	-	-	< 0.010
Plasticisers in SVOC Water	Samples by GC-MS					
Bis(2-ethylhexyl)phthalate	g/m³	< 0.03	-	-	-	< 0.03
Butylbenzylphthalate	g/m³	< 0.010	-	-	-	< 0.010
Di(2-ethylhexyl)adipate	g/m³	< 0.005	-	-	-	< 0.005
Diethylphthalate	g/m³	< 0.010	-	-	-	< 0.010
Dimethylphthalate	g/m³	< 0.010	-	-	-	< 0.010
Di-n-butylphthalate	g/m³	< 0.010	-	-	-	< 0.010
Di-n-octylphthalate	g/m³	< 0.010	-	-	-	< 0.010
Other Halogenated compoun	nds in SVOC Water S	Samples by GC-MS				
1,2-Dichlorobenzene	g/m³	< 0.010	-	-	-	< 0.010
1,3-Dichlorobenzene	g/m³	< 0.010	-	-	-	< 0.010
1,4-Dichlorobenzene	g/m³	< 0.010	-	-	-	< 0.010
Hexachlorobutadiene	g/m³	< 0.010	-	-	-	< 0.010
Hexachloroethane	g/m³	< 0.010	-	-	-	< 0.010
1,2,4-Trichlorobenzene	g/m³	< 0.005	-	-	-	< 0.005
Other compounds in SVOC	Water Samples by G	C-MS				
Benzyl alcohol	g/m³	< 0.05	-	-	-	< 0.05
Carbazole	g/m³	< 0.005	-	-	-	< 0.005
Dibenzofuran	g/m³	< 0.005	-	-	-	< 0.005
Isophorone	g/m³	< 0.005	-	-	-	< 0.005
Total Petroleum Hydrocarbor	ns in Water					
C7 - C9	g/m³	< 0.10	-	-	-	< 0.10
C10 - C14	g/m³	< 0.2	-	-	-	< 0.2
C15 - C36	g/m³	< 0.4	-	-	-	< 0.4
Total hydrocarbons (C7 - C3	6) g/m ³	< 0.7	-	-	-	< 0.7

Sample Type: Aqueous							
Test	Method Description	Default Detection Limit	Sample No				
Individual Tests							
Total Suspended Solids	Filtration using Whatman 934 AH, Advantec GC-50 or equivalent filters (nominal pore size 1.2 - 1.5µm), gravimetric determination. APHA 2540 D (modified) : Online Edition.	3 g/m ³	1-5				
Filtration for dissolved metals analysis	Sample filtration through 0.45µm membrane filter and preservation with nitric acid. APHA 3030 B: Online Edition.	-	1-5				
Heavy metals, dissolved, trace As,Cd,Cr,Cu,Ni,Pb,Zn	0.45µm Filtration, ICP-MS, trace level. APHA 3125 B : Online Edition.	0.00005 - 0.0010 g/m ³	1-5				
Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq	Liquid / liquid extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.00010 - 0.0005 g/m ³	1-5				
Semivolatile Organic Compounds Screening in Water by GC-MS	Liquid / liquid extraction, GC-MS analysis. In-house based on US EPA 8270.	0.003 - 0.10 g/m ³	1, 5				
Total Petroleum Hydrocarbons in Water							
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.10 g/m ³	1, 5				
C10 - C14	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.2 g/m ³	1, 5				
C15 - C36	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	0.4 g/m ³	1, 5				
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	0.7 g/m ³	1, 5				

Testing was completed between 12-Oct-2024 and 16-Oct-2024. 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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Ara Heron BSc (Tech)



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Certificate of Analysis

Page 1 of 3

SPv1

Client:

Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 2292 Tauranga 3140 Lab No: 3582989 **Date Received: Date Reported:**

16-May-2024 20-May-2024

Quote No: 126272

Order No:

Client Reference: 521290-064 Submitted By: Tiana Hill

Sample Type: Soil					
	Sample Name:	BH30_0.23m 13-May-2024	BH30_0.62m 13-May-2024		
	Lab Number:	3582989.1	3582989.2		
Individual Tests					
Dry Matter	g/100g as rcvd	74	69		
Heavy Metals, Screen Level	•				
Total Recoverable Arsenic	mg/kg dry wt	12	< 2		
Total Recoverable Cadmium	mg/kg dry wt	0.12	< 0.10		
Total Recoverable Chromium	mg/kg dry wt	26	22		
Total Recoverable Copper	mg/kg dry wt	20	5		
Total Recoverable Lead	mg/kg dry wt	31	8.1		
Total Recoverable Nickel	mg/kg dry wt	23	9		
Total Recoverable Zinc	mg/kg dry wt	53	20		
Organochlorine Pesticides Sc	reening in Soil				
Aldrin	mg/kg dry wt	< 0.014	-		
alpha-BHC	mg/kg dry wt	< 0.014	-		
beta-BHC	mg/kg dry wt	< 0.014	-		
delta-BHC	mg/kg dry wt	< 0.014	-		
gamma-BHC (Lindane)	mg/kg dry wt	< 0.014	-		
cis-Chlordane	mg/kg dry wt	< 0.014	-		
trans-Chlordane	mg/kg dry wt	< 0.014	-		
2,4'-DDD	mg/kg dry wt	< 0.014	-		
4,4'-DDD	mg/kg dry wt	< 0.014	-		
2,4'-DDE	mg/kg dry wt	< 0.014	-		
4,4'-DDE	mg/kg dry wt	< 0.014	-		
2,4'-DDT	mg/kg dry wt	< 0.014	-		
4,4'-DDT	mg/kg dry wt	< 0.014	-		
Total DDT Isomers	mg/kg dry wt	< 0.09	-		
Dieldrin	mg/kg dry wt	< 0.014	-		
Endosulfan I	mg/kg dry wt	< 0.014	-		
Endosulfan II	mg/kg dry wt	< 0.014	-		
Endosulfan sulphate	mg/kg dry wt	< 0.014	-		
Endrin	mg/kg dry wt	< 0.014	-		
Endrin aldehyde	mg/kg dry wt	< 0.014	-		
Endrin ketone	mg/kg dry wt	< 0.014	-		
Heptachlor	mg/kg dry wt	< 0.014	-		
Heptachlor epoxide	mg/kg dry wt	< 0.014	-		
Hexachlorobenzene	mg/kg dry wt	< 0.014	-		
Methoxychlor	mg/kg dry wt	< 0.014	-		





Sample Type: Soil					
Sa	mple Name:	BH30_0.23m 13-May-2024	BH30_0.62m 13-May-2024		
I	Lab Number:	3582989.1	3582989.2		
Polycyclic Aromatic Hydrocarbor	ns Screening in S	Goil*			
Total of Reported PAHs in Soil	mg/kg dry wt	1.6	< 0.4		
1-Methylnaphthalene	mg/kg dry wt	< 0.014	< 0.015		
2-Methylnaphthalene	mg/kg dry wt	< 0.03	< 0.03		
Acenaphthylene	mg/kg dry wt	< 0.014	< 0.015		
Acenaphthene	mg/kg dry wt	< 0.014	< 0.015		
Anthracene	mg/kg dry wt	< 0.014	< 0.015		
Benzo[a]anthracene	mg/kg dry wt	0.110	< 0.015		
Benzo[a]pyrene (BAP)	mg/kg dry wt	0.26	< 0.015		
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	0.35	< 0.035		
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	0.35	< 0.035		
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	0.23	< 0.015		
Benzo[e]pyrene	mg/kg dry wt	0.135	< 0.015		
Benzo[g,h,i]perylene	mg/kg dry wt	0.164	< 0.015		
Benzo[k]fluoranthene	mg/kg dry wt	0.091	< 0.015		
Chrysene	mg/kg dry wt	0.102	< 0.015		
Dibenzo[a,h]anthracene	mg/kg dry wt	0.030	< 0.015		
Fluoranthene	mg/kg dry wt	0.111	< 0.015		
Fluorene	mg/kg dry wt	< 0.014	< 0.015		
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	0.155	< 0.015		
Naphthalene	mg/kg dry wt	< 0.07	< 0.08		
Perylene	mg/kg dry wt	0.063	< 0.015		
Phenanthrene	mg/kg dry wt	0.020	< 0.015		
Pyrene	mg/kg dry wt	0.170	< 0.015		

Sample Type: Soil						
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%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-2			
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1-2			
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-2			
Organochlorine Pesticides Screening in Soil	Sonication extraction, GC-ECD analysis. Tested on as received sample. In-house based on US EPA 8081.	0.010 - 0.06 mg/kg dry wt	1			
Polycyclic Aromatic Hydrocarbons Screening in Soil*	Sonication extraction, GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.010 - 0.05 mg/kg dry wt	1-2			
Dry Matter	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			
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	1-2			

Sample Type: Soil							
Test	Method Description	Default Detection Limit	Sample No				
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	1-2				

Testing was completed between 17-May-2024 and 20-May-2024. 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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Martin Cowell - BSc



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Page 1 of 1

Client: Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 2292 Tauranga 3140 Lab No: Date Received: 3590857 24-May-2024

Date Reported:

28-May-2024

Quote No: Order No:

126272

Client Reference: 52

521290-064

Submitted By: Andrew Allcock

Sample Type: Soil					
	Sample Name:	BH22_0.2-0.3m 22-May-2024	BH22_0.6m 22-May-2024		
	Lab Number:	3590857.1	3590857.2		
Heavy Metals, Screen Level					
Total Recoverable Arsenic	mg/kg dry wt	6	7		
Total Recoverable Cadmium	mg/kg dry wt	0.10	< 0.10		
Total Recoverable Chromium	mg/kg dry wt	28	9		
Total Recoverable Copper	mg/kg dry wt	23	3		
Total Recoverable Lead	mg/kg dry wt	199	11.6		
Total Recoverable Nickel	mg/kg dry wt	55	6		
Total Recoverable Zinc	mg/kg dry wt	74	6		

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 Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil						
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%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-2			
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-2			

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

Testing was completed between 25-May-2024 and 28-May-2024. 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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Ara Heron BSc (Tech)







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Page 1 of 3

(Amended)

SPv2

Client: Contact: Aurecon New Zealand Limited

Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 Lab No: 3620390 **Date Received:**

04-Jul-2024

Date Reported: 14-Aug-2024

Quote No: Order No:

126272

Client Reference: 521290-064 Submitted By:

Andrew Allcock

			Submitted	Andrew A	incock
Sample Type: Soil					
Sa	ample Name:	BH29_0.05-0.2 04-Jul-2024	BH48_0.05-0.2 04-Jul-2024	BH10_0.4-0.5 04-Jul-2024	BH10_1.0-1.1 04-Jul-2024
	Lab Number:	3620390.1	3620390.2	3620390.4	3620390.5
Individual Tests			1		1
Dry Matter	g/100g as rcvd	-	-	79	70
TCLP Weight of Sample Taken	g	-	50	-	-
TCLP Initial Sample pH	pH Units	-	7.8	-	-
TCLP Acid Adjusted Sample pH	l pH Units	-	1.6	-	-
TCLP Extractant Type*		-	NaOH/Acetic acid at pH 4.93 +/- 0.05	-	-
TCLP Extraction Fluid pH	pH Units	-	5.0	-	-
TCLP Post Extraction Sample p	H pH Units	-	5.0	-	-
Heavy Metals, Screen Level	<u> </u>				
Total Recoverable Arsenic	mg/kg dry wt	12	6	5	7
Total Recoverable Cadmium	mg/kg dry wt	0.32	0.44	0.15	0.11
Total Recoverable Chromium	mg/kg dry wt	43	19	23	21
Total Recoverable Copper	mg/kg dry wt	52	35	31	14
Total Recoverable Lead	mg/kg dry wt	69	900	56	42
Total Recoverable Nickel	mg/kg dry wt	80	18	26	12
Total Recoverable Zinc	mg/kg dry wt	132	310	90	98
BTEX in Soil by Headspace GC	-MS				
Benzene	mg/kg dry wt	-	-	< 0.06	< 0.07
Toluene	mg/kg dry wt	-	-	< 0.06	< 0.07
Ethylbenzene	mg/kg dry wt	-	-	< 0.06	< 0.07
m&p-Xylene	mg/kg dry wt	-	-	< 0.11	< 0.13
o-Xylene	mg/kg dry wt	-	-	< 0.06	< 0.07
Polycyclic Aromatic Hydrocarbo	ns Screening in Sc	oil*			
Total of Reported PAHs in Soil	mg/kg dry wt	-	-	2.7	2.7
1-Methylnaphthalene	mg/kg dry wt	-	-	< 0.013	< 0.014
2-Methylnaphthalene	mg/kg dry wt	-	-	< 0.013	< 0.014
Acenaphthylene	mg/kg dry wt	-	-	0.028	0.017
Acenaphthene	mg/kg dry wt	-	-	< 0.013	< 0.014
Anthracene	mg/kg dry wt	-	-	0.045	0.031
Benzo[a]anthracene	mg/kg dry wt	-	-	0.167	0.181
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	-	0.25	0.25
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	-	-	0.35	0.37
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	-	0.35	0.36
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	-	-	0.25	0.28
Benzo[e]pyrene	mg/kg dry wt	-	-	0.149	0.146
Benzo[g,h,i]perylene	mg/kg dry wt	-	-	0.179	0.175





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Sample Type: Soil						
	Sample Name:	BH29_0.05-0.2 04-Jul-2024	BH48_0.05-0.2 04-Jul-2024	BH10_0.4-0.5 04-Jul-2024	BH10_1.0-1.1 04-Jul-2024	
	Lab Number:	3620390.1	3620390.2	3620390.4	3620390.5	
Polycyclic Aromatic Hydrocarl	bons Screening in S	oil*				
Benzo[k]fluoranthene	mg/kg dry wt	-	-	0.100	0.108	
Chrysene	mg/kg dry wt	-	-	0.169	0.179	
Dibenzo[a,h]anthracene	mg/kg dry wt	-	-	0.032	0.032	
Fluoranthene	mg/kg dry wt	-	-	0.40	0.45	
Fluorene	mg/kg dry wt	-	-	0.013	< 0.014	
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	-	0.169	0.169	
Naphthalene	mg/kg dry wt	-	-	< 0.07	< 0.07	
Perylene	mg/kg dry wt	-	-	0.062	0.062	
Phenanthrene	mg/kg dry wt	-	-	0.160	0.176	
Pyrene	mg/kg dry wt	-	-	0.48	0.44	
Total Petroleum Hydrocarbons	s in Soil					
C7 - C9	mg/kg dry wt	-	-	< 20	< 20	
C10 - C14	mg/kg dry wt	-	-	< 20	< 20	
C15 - C36	mg/kg dry wt	-	-	< 40	< 40	
Total hydrocarbons (C7 - C36) mg/kg dry wt	-	-	< 80	< 80	

Sample Type: Aqueous				
Sample Name:	BH48_0.05-0.2 [TCLP Extract]			
Lab Number:	3620390.7			
Individual Tests				
Total Lead g/m ³	0.55			

Analyst's Comments

Amended Report: This certificate of analysis replaces report '3620390-SPv1' issued on 10-Jul-2024 at 4:53 pm. Reason for amendment: TCLP lead added to one sample.

Summary of Methods

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-2, 4-5
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	4-5
Dry Matter	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	4-5
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	4-5
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	4-5
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-2, 4-5

Test	Method Description	Default Detection Limit	Sample No
BTEX in Soil by Headspace GC-MS	Solvent extraction, Headspace GC-MS analysis. Tested on as received sample. In-house based on US EPA 8260 and 5021.	0.05 - 0.10 mg/kg dry wt	4-5
Polycyclic Aromatic Hydrocarbons Screening in Soil*	Sonication extraction, GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.010 - 0.05 mg/kg dry wt	4-5
TCLP Profile*	Extraction at 30 +/- 2 rpm for 18 +/- 2 hours, (Ratio 1g sample : 20g extraction fluid). US EPA 1311.	-	2
Total Petroleum Hydrocarbons in Soil			•
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	20 mg/kg dry wt	4-5
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	4-5
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	4-5
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	4-5
TCLP Profile	·		•
TCLP Weight of Sample Taken	Gravimetric. US EPA 1311.	0.1 g	2
TCLP Initial Sample pH	pH meter. US EPA 1311.	0.1 pH Units	2
TCLP Acid Adjusted Sample pH	pH meter. US EPA 1311.	0.1 pH Units	2
TCLP Extractant Type*	US EPA 1311.	-	2
TCLP Extraction Fluid pH	pH meter. US EPA 1311.	0.1 pH Units	2
TCLP Post Extraction Sample pH	pH meter. US EPA 1311.	0.1 pH Units	2

Sample Type: Aqueous							
Test	Method Description	Default Detection Limit	Sample No				
Individual Tests							
Total Digestion of Extracted Samples*	Nitric acid digestion. APHA 3030 E (modified) : Online Edition.	-	7				
Total Lead	Nitric acid digestion, ICP-MS, screen level. APHA 3125 B : Online Edition.	0.0021 g/m ³	7				

Testing was completed between 08-Jul-2024 and 14-Aug-2024. 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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Ara Heron BSc (Tech)



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Certificate of Analysis

Page 1 of 3

SPv1

Client: Contact: Aurecon New Zealand Limited

Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 2292 Tauranga 3140 Lab No: 3624078 **Date Received: Date Reported: Quote No:**

10-Jul-2024 15-Jul-2024 126272

Order No:

Client Reference: 521290-064 Submitted By: Tiana Hill

Sample Type: Soil		Sample Type: Soil					
	ample Name:	BH49_0.05-0.2	BH49_0.3-0.4	BH10_1.8-1.9	BH10_3.3-3.4	BH10_5.9-6.0	
	ampio mamor	08-Jul-2024	08-Jul-2024	05-Jul-2024	05-Jul-2024	05-Jul-2024	
	Lab Number:	3624078.1	3624078.2	3624078.5	3624078.6	3624078.7	
Individual Tests							
Dry Matter	g/100g as rcvd	72	80	-	-	-	
Heavy Metals, Screen Level							
Total Recoverable Arsenic	mg/kg dry wt	9	5	3	< 2	< 2	
Total Recoverable Cadmium	mg/kg dry wt	0.18	0.14	< 0.10	< 0.10	< 0.10	
Total Recoverable Chromium	mg/kg dry wt	24	18	18	11	24	
Total Recoverable Copper	mg/kg dry wt	40	28	14	11	16	
Total Recoverable Lead	mg/kg dry wt	99	98	34	28	9.2	
Total Recoverable Nickel	mg/kg dry wt	50	23	15	9	14	
Total Recoverable Zinc	mg/kg dry wt	120	112	58	56	30	
BTEX in Soil by Headspace GC	C-MS						
Benzene	mg/kg dry wt	< 0.06	< 0.06	-	-	-	
Toluene	mg/kg dry wt	< 0.06	< 0.06	-	-	-	
Ethylbenzene	mg/kg dry wt	< 0.06	< 0.06	-	-	-	
m&p-Xylene	mg/kg dry wt	< 0.12	< 0.11	-	-	-	
o-Xylene	mg/kg dry wt	< 0.06	< 0.06	-	-	-	
Polycyclic Aromatic Hydrocarbo	ons Screening in S	Soil*				1	
Total of Reported PAHs in Soil	mg/kg dry wt	16.8	4.9	-	-	-	
1-Methylnaphthalene	mg/kg dry wt	< 0.014	< 0.013	-	-	-	
2-Methylnaphthalene	mg/kg dry wt	< 0.014	< 0.019	-	-	-	
Acenaphthylene	mg/kg dry wt	0.142	0.028	-	-	-	
Acenaphthene	mg/kg dry wt	0.020	0.014	-	-	-	
Anthracene	mg/kg dry wt	0.21	0.067	-	-	-	
Benzo[a]anthracene	mg/kg dry wt	1.18	0.34	-	-	-	
Benzo[a]pyrene (BAP)	mg/kg dry wt	1.69	0.43	-	-	-	
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	2.4	0.63	-	-	-	
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	2.4	0.62	-	-	-	
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	1.78	0.45	-	-	-	
Benzo[e]pyrene	mg/kg dry wt	1.02	0.25	-	-	-	
Benzo[g,h,i]perylene	mg/kg dry wt	1.22	0.33	-	-	-	
Benzo[k]fluoranthene	mg/kg dry wt	0.70	0.171	-	-	-	
Chrysene	mg/kg dry wt	1.11	0.39	-	-	-	
Dibenzo[a,h]anthracene	mg/kg dry wt	0.22	0.057	-	-	-	
Fluoranthene	mg/kg dry wt	2.3	0.78	-	-	-	
Fluorene	mg/kg dry wt	0.031	0.013	-	-	-	
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	1.19	0.28	-	-	-	

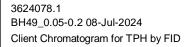


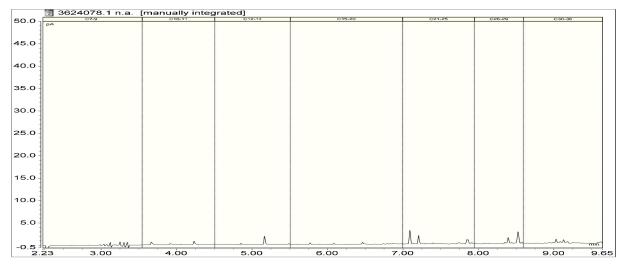


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Sample Type: Soil						
	Sample Name:	BH49_0.05-0.2 08-Jul-2024	BH49_0.3-0.4 08-Jul-2024	BH10_1.8-1.9 05-Jul-2024	BH10_3.3-3.4 05-Jul-2024	BH10_5.9-6.0 05-Jul-2024
	Lab Number:	3624078.1	3624078.2	3624078.5	3624078.6	3624078.7
Polycyclic Aromatic Hydrocart	bons Screening in S	Soil*				
Naphthalene	mg/kg dry wt	< 0.07	< 0.07	-	-	-
Perylene	mg/kg dry wt	0.43	0.101	-	-	-
Phenanthrene	mg/kg dry wt	0.69	0.28	-	-	-
Pyrene	mg/kg dry wt	2.7	0.85	-	-	-
Total Petroleum Hydrocarbons	s in Soil					
C7 - C9	mg/kg dry wt	< 20	< 20	-	-	-
C10 - C14	mg/kg dry wt	< 20	< 20	-	-	-
C15 - C36	mg/kg dry wt	110	< 40	-	-	-
Total hydrocarbons (C7 - C36) mg/kg dry wt	142	< 80	-	-	-

	Sample Name:	BH10_9.4-9.5 05-Jul-2024
	Lab Number:	3624078.8
Heavy Metals, Screen Level		
Total Recoverable Arsenic	mg/kg dry wt	< 2
Total Recoverable Cadmium	mg/kg dry wt	< 0.10
Total Recoverable Chromium	mg/kg dry wt	20
Total Recoverable Copper	mg/kg dry wt	15
Total Recoverable Lead	mg/kg dry wt	7.2
Total Recoverable Nickel	mg/kg dry wt	20
Total Recoverable Zinc	mg/kg dry wt	50





Sample Type: Soil						
Test	Method Description	Default Detection Limit	Sample No			
Individual Tests						
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-2, 5-8			
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1-2			

Test	Method Description	Default Detection Limit	Sample No
Dry Matter	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
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	1-2
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	1-2
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-2, 5-8
BTEX in Soil by Headspace GC-MS	Solvent extraction, Headspace GC-MS analysis. Tested on as received sample. In-house based on US EPA 8260 and 5021.	0.05 - 0.10 mg/kg dry wt	1-2
Polycyclic Aromatic Hydrocarbons Screening in Soil*	Sonication extraction, GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.010 - 0.05 mg/kg dry wt	1-2
Total Petroleum Hydrocarbons in Soil			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	1
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	20 mg/kg dry wt	1-2
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-2
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1-2
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1-2

Testing was completed between 11-Jul-2024 and 15-Jul-2024. 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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Page 1 of 3

SPv1

Client: Contact: Aurecon New Zealand Limited

Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 2292 Tauranga 3140 Lab No: 3625593 **Date Received:** 11-Jul-2024 **Date Reported:** 17-Jul-2024 **Quote No:**

126272

Order No:

Submitted By:

Client Reference: 521290-064 Andrew Allcock

		Submitted by.	ATTOTO CW ATTOOCK
Sample Type: Soil			
Sa	mple Name:	BH13_0.4-0.5 10-Jul-2024	BH13_1.4-1.5 10-Jul-2024
	_ab Number:	3625593.2	3625593.4
Individual Tests	'	·	
Dry Matter	g/100g as rcvd	73	68
Heavy Metals, Screen Level	<u>'</u>		
Total Recoverable Arsenic	mg/kg dry wt	5	3
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	40	24
Total Recoverable Copper	mg/kg dry wt	36	9
Total Recoverable Lead	mg/kg dry wt	187	6.8
Total Recoverable Nickel	mg/kg dry wt	35	5
Total Recoverable Zinc	mg/kg dry wt	85	14
Polycyclic Aromatic Hydrocarbon	ns Screening in Soi	il*	
Total of Reported PAHs in Soil	mg/kg dry wt	1.8	< 0.4
1-Methylnaphthalene	mg/kg dry wt	< 0.014	< 0.015
2-Methylnaphthalene	mg/kg dry wt	< 0.03	< 0.03
Acenaphthylene	mg/kg dry wt	0.024	< 0.015
Acenaphthene	mg/kg dry wt	< 0.014	< 0.015
Anthracene	mg/kg dry wt	0.016	< 0.015
Benzo[a]anthracene	mg/kg dry wt	0.128	< 0.015
Benzo[a]pyrene (BAP)	mg/kg dry wt	0.190	< 0.015
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	0.28	< 0.036
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	0.27	< 0.036
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	0.22	< 0.015
Benzo[e]pyrene	mg/kg dry wt	0.112	< 0.015
Benzo[g,h,i]perylene	mg/kg dry wt	0.145	< 0.015
Benzo[k]fluoranthene	mg/kg dry wt	0.077	< 0.015
Chrysene	mg/kg dry wt	0.104	< 0.015
Dibenzo[a,h]anthracene	mg/kg dry wt	0.027	< 0.015
Fluoranthene	mg/kg dry wt	0.22	< 0.015
Fluorene	mg/kg dry wt	< 0.014	< 0.015
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	0.142	< 0.015
Naphthalene	mg/kg dry wt	< 0.07	< 0.08
Perylene	mg/kg dry wt	0.042	< 0.015
Phenanthrene	mg/kg dry wt	0.059	< 0.015
Pyrene	mg/kg dry wt	0.25	< 0.015





Sample Type: Soil			
,	Sample Name:	BH13_0.4-0.5 10-Jul-2024	BH13_1.4-1.5 10-Jul-2024
	Lab Number:	3625593.2	3625593.4
Total Petroleum Hydrocarbons	in Soil		
C7 - C9	mg/kg dry wt	< 20	< 30
C10 - C14	mg/kg dry wt	< 20	< 20
C15 - C36	mg/kg dry wt	< 40	< 40
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 80	< 90

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	2, 4
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	2, 4
Dry Matter	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	2, 4
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	2, 4
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	2, 4
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.010 - 70 mg/kg dry wt	2, 4
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	2, 4
Total Petroleum Hydrocarbons in Soil			•
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	20 mg/kg dry wt	2, 4
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	2, 4
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	2, 4
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	2, 4

Testing was completed between 13-Jul-2024 and 17-Jul-2024. 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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Page 1 of 3

(Amended)

SPv3

Client: Contact:

Aurecon New Zealand Limited

ntact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 **Lab No:** 3629193

17-Jul-2024

12-Aug-2024

126272

Quote No: Order No:

Date Received:

Date Reported:

Client Reference: Submitted By:

521290 - 064 Andrew Allcock

Sample Type: Soil	Sample Type: Soil						
	Sample Name:	BH39_0.5-0.6 16-Jul-2024	BH39_1.0-1.1 16-Jul-2024	BH39_1.5-1.6 16-Jul-2024			
	Lab Number:	3629193.1	3629193.2	3629193.3			
Individual Tests							
Dry Matter	g/100g as rcvd	79	-	-			
Total Recoverable Arsenic	mg/kg dry wt	-	4	-			
Heavy Metals, Screen Level							
Total Recoverable Arsenic	mg/kg dry wt	70	-	4			
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	-	< 0.10			
Total Recoverable Chromium	mg/kg dry wt	12	-	22			
Total Recoverable Copper	mg/kg dry wt	10	-	21			
Total Recoverable Lead	mg/kg dry wt	54	-	10.3			
Total Recoverable Nickel	mg/kg dry wt	9	-	< 2			
Total Recoverable Zinc	mg/kg dry wt	21	-	10			
BTEX in Soil by Headspace G	C-MS						
Benzene	mg/kg dry wt	< 0.06	-	-			
Toluene	mg/kg dry wt	< 0.06	-	-			
Ethylbenzene	mg/kg dry wt	< 0.06	-	-			
m&p-Xylene	mg/kg dry wt	< 0.11	-	-			
o-Xylene	mg/kg dry wt	< 0.06	-	-			
Polycyclic Aromatic Hydrocart	oons Screening in S	oil*					
Total of Reported PAHs in Soi	I mg/kg dry wt	< 0.3	-	-			
1-Methylnaphthalene	mg/kg dry wt	< 0.013	-	-			
2-Methylnaphthalene	mg/kg dry wt	< 0.013	-	-			
Acenaphthylene	mg/kg dry wt	< 0.013	-	-			
Acenaphthene	mg/kg dry wt	< 0.013	-	-			
Anthracene	mg/kg dry wt	< 0.013	-	-			
Benzo[a]anthracene	mg/kg dry wt	< 0.013	-	-			
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.013	-	-			
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	mg/kg dry wt	< 0.030	-	-			
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.030	-	-			
Benzo[b]fluoranthene + Benzo fluoranthene	[j] mg/kg dry wt	< 0.013	-	-			
Benzo[e]pyrene	mg/kg dry wt	< 0.013	-	-			
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.013	-	-			
Benzo[k]fluoranthene	mg/kg dry wt	< 0.013	-	-			
Chrysene	mg/kg dry wt	< 0.013	-	-			
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.013	-	-			
Fluoranthene	mg/kg dry wt	< 0.013	-	-			
Fluorene	mg/kg dry wt	< 0.013	-	-			
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.013	-	-			





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.

Sample Type: Soil							
	Sample Name:	BH39_0.5-0.6 16-Jul-2024	BH39_1.0-1.1 16-Jul-2024	BH39_1.5-1.6 16-Jul-2024			
	Lab Number:	3629193.1	3629193.2	3629193.3			
Polycyclic Aromatic Hydrocart	oons Screening in S	oil*					
Naphthalene	mg/kg dry wt	< 0.07	-	-			
Perylene	mg/kg dry wt	< 0.013	-	-			
Phenanthrene	mg/kg dry wt	< 0.013	-	-			
Pyrene	mg/kg dry wt	< 0.013	-	-			
Total Petroleum Hydrocarbons	s in Soil						
C7 - C9	mg/kg dry wt	< 20	-	-			
C10 - C14	mg/kg dry wt	< 20	-	-			
C15 - C36	mg/kg dry wt	< 40	-	-			
Total hydrocarbons (C7 - C36) mg/kg dry wt	< 80	-	-			

Analyst's Comments

It was observed that the container for sample {3629193.1} were not completely filled. Volatile loss may have occurred due to the headspace created in the container.

Amended Report: This certificate of analysis replaces report '3629193-SPv2' issued on 23-Jul-2024 at 3:27 pm. Reason for amendment: Testing added to sample 2.

Summary of Methods

Sample Type: Soil							
Test	Method Description	Default Detection Limit	Sample N				
Individual Tests							
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	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%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	2				
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1				
Dry Matter	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				
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	2				
Total Recoverable Arsenic	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	2 mg/kg dry wt	2				
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	1				
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	1				
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1, 3				
BTEX in Soil by Headspace GC-MS	Solvent extraction, Headspace GC-MS analysis. Tested on as received sample. In-house based on US EPA 8260 and 5021.	0.05 - 0.10 mg/kg dry wt	1				

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
Polycyclic Aromatic Hydrocarbons Screening in Soil*	Sonication extraction, GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.010 - 0.05 mg/kg dry wt	1
Total Petroleum Hydrocarbons in Soil			,
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	20 mg/kg dry wt	1
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1

Testing was completed between 18-Jul-2024 and 12-Aug-2024. 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.

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

Ara Heron BSc (Tech)



6 0508 HILL LAB (44 555 22) **%** +64 7 858 2000 mail@hill-labs.co.nz www.hill-labs.co.nz

Certificate of Analysis

Page 1 of 3

SPv1

Client: Contact: Aurecon New Zealand Limited

Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 Lab No: 3634409 **Date Received:** 24-Jul-2024 **Date Reported:** 29-Jul-2024 126272

Quote No:

Order No:

Client Reference: 521290-064 Submitted By: Tiana Hill

				· · · · · · · · · · · · · · · · · · ·		
Sample Type: Soil						
S	Sample Name:	BH21_5.4-5.5 22-Jul-2024	BH21_11.0-11.1 22-Jul-2024	BH21_16.4-16.5 22-Jul-2024	BH35_3.4-3.5 22-Jul-2024	BH35_4.0-4.1 22-Jul-2024
	Lab Number:	3634409.1	3634409.2	3634409.3	3634409.4	3634409.5
Individual Tests						
Dry Matter	g/100g as rcvd	-	-	-	63	-
Heavy Metals, Screen Level			1	1		
Total Recoverable Arsenic	mg/kg dry wt	4	2	3	24	11
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	0.11	< 0.10
Total Recoverable Chromium	mg/kg dry wt	8	12	13	38	9
Total Recoverable Copper	mg/kg dry wt	14	10	11	31	21
Total Recoverable Lead	mg/kg dry wt	6.6	4.3	5.1	46	5.9
Total Recoverable Nickel	mg/kg dry wt	9	11	10	94	64
Total Recoverable Zinc	mg/kg dry wt	10	43	40	15	118
Polycyclic Aromatic Hydrocarbo	ons Screening in S	Soil*				
Total of Reported PAHs in Soil	mg/kg dry wt	-	-	-	< 0.4	-
1-Methylnaphthalene	mg/kg dry wt	-	-	-	< 0.016	-
2-Methylnaphthalene	mg/kg dry wt	-	-	-	< 0.016	-
Acenaphthylene	mg/kg dry wt	-	-	-	< 0.016	-
Acenaphthene	mg/kg dry wt	-	-	-	< 0.016	-
Anthracene	mg/kg dry wt	-	-	-	< 0.016	-
Benzo[a]anthracene	mg/kg dry wt	-	-	-	< 0.016	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	-	-	< 0.016	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	mg/kg dry wt	-	-	-	< 0.039	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	-	-	< 0.039	-
Benzo[b]fluoranthene + Benzo[j fluoranthene	j] mg/kg dry wt	-	-	-	< 0.016	-
Benzo[e]pyrene	mg/kg dry wt	-	-	-	< 0.016	-
Benzo[g,h,i]perylene	mg/kg dry wt	-	-	-	< 0.016	-
Benzo[k]fluoranthene	mg/kg dry wt	-	-	-	< 0.016	-
Chrysene	mg/kg dry wt	-	-	-	< 0.016	-
Dibenzo[a,h]anthracene	mg/kg dry wt	-	-	-	< 0.016	-
Fluoranthene	mg/kg dry wt	-	-	-	< 0.016	-
Fluorene	mg/kg dry wt	-	-	-	< 0.016	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	-	-	< 0.016	-
Naphthalene	mg/kg dry wt	-	-	-	< 0.08	-
Perylene	mg/kg dry wt	-	-	-	< 0.016	-
Phenanthrene	mg/kg dry wt	-	-	-	< 0.016	-
Pyrene	mg/kg dry wt	-	-	-	< 0.016	-





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Sample Type: Soil						
;	Sample Name:	BH21_5.4-5.5	BH21_11.0-11.1	BH21_16.4-16.5	_	BH35_4.0-4.1
		22-Jul-2024	22-Jul-2024	22-Jul-2024	22-Jul-2024	22-Jul-2024
	Lab Number:	3634409.1	3634409.2	3634409.3	3634409.4	3634409.5
Total Petroleum Hydrocarbons	in Soil					
C7 - C9	mg/kg dry wt	-	-	-	< 30	-
C10 - C14	mg/kg dry wt	-	-	-	< 20	-
C15 - C36	mg/kg dry wt	-	-	-	< 40	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	-	-	-	< 90	-
;	Sample Name:	BH39_3.0-3.45 22-Jul-2024	BH39_6.0-6.45 22-Jul-2024	BH39_9.0-9.45 22-Jul-2024	BH39_12.0-12.45 22-Jul-2024	BH48_3.0-3.1 22-Jul-2024
	Lab Number:	3634409.6	3634409.7	3634409.8	3634409.9	3634409.10
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	4	4	5	5	3
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	15	20	16	22	16
Total Recoverable Copper	mg/kg dry wt	33	30	31	25	15
Total Recoverable Lead	mg/kg dry wt	10.9	8.2	8.8	7.7	5.3
Total Recoverable Nickel	mg/kg dry wt	5	57	20	18	24
Total Recoverable Zinc	mg/kg dry wt	21	47	69	60	68
;	Sample Name:	BH48_6.5-6.7 22-Jul-2024	BH49_2. 22-Jul-2		49_5.0-5.1 2-Jul-2024	BH49_5.9-6.0 22-Jul-2024
	Lab Number:	3634409.11	3634409	9.12 36	34409.13	3634409.14
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	3	2		< 2	2
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.1	0	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	25	19		19	20
Total Recoverable Copper	mg/kg dry wt	15	12		18	13
Total Recoverable Lead	mg/kg dry wt	5.0	4.8		6.6	4.4
Total Recoverable Nickel	mg/kg dry wt	25	3		< 2	12
Total Recoverable Zinc	mg/kg dry wt	59	21		5	36

Sample Type: Soil	Sample Type: Soil							
Test	Method Description	Default Detection Limit	Sample No					
Individual Tests								
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-14					
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	4					
Dry Matter	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	4					
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	4					
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	4					

Sample Type: Soil							
Test	Method Description	Default Detection Limit	Sample No				
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.010 - 70 mg/kg dry wt	4				
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-14				
Total Petroleum Hydrocarbons in Soil							
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	20 mg/kg dry wt	4				
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	4				
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	4				
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	4				

Testing was completed between 25-Jul-2024 and 29-Jul-2024. 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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Huminon

Kim Harrison MSc



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Certificate of Analysis

Page 1 of 3

SPv1

Client: Contact:

Aurecon New Zealand Limited

ontact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149

 Lab No:
 3651482

 Date Received:
 16-Aug-2024

 Date Reported:
 21-Aug-2024

 Quote No:
 126272

Quote No: Order No:

Client Reference: 521290-064
Submitted By: Tiana Hill

Sample Type: Soil						
	mple Name:	BH44_0.3-0.4	BH44_1.1-1.2	BH44_3.0-3.4	BH44_6.0-6.3	BH44_10.5-10.6
	imple riame.	14-Aug-2024	14-Aug-2024	15-Aug-2024	15-Aug-2024	15-Aug-2024
l	_ab Number:	3651482.1	3651482.2	3651482.3	3651482.4	3651482.5
Individual Tests						
Dry Matter	g/100g as rcvd	76	62	79	-	-
Heavy Metals, Screen Level					,	,
Total Recoverable Arsenic	mg/kg dry wt	3	4	< 2	< 2	2
Total Recoverable Cadmium	mg/kg dry wt	0.17	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	15	22	18	24	27
Total Recoverable Copper	mg/kg dry wt	16	22	6	11	16
Total Recoverable Lead	mg/kg dry wt	54	45	15.3	6.1	5.4
Total Recoverable Nickel	mg/kg dry wt	14	18	5	12	14
Total Recoverable Zinc	mg/kg dry wt	61	47	41	31	45
Polycyclic Aromatic Hydrocarbon	ns Screening in S	Soil*				
Total of Reported PAHs in Soil	mg/kg dry wt	0.7	1.1	< 0.3	-	-
1-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.016	< 0.013	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.016	< 0.013	-	-
Acenaphthylene	mg/kg dry wt	< 0.013	< 0.016	< 0.013	-	-
Acenaphthene	mg/kg dry wt	< 0.013	< 0.016	< 0.013	-	-
Anthracene	mg/kg dry wt	< 0.013	< 0.016	< 0.013	-	-
Benzo[a]anthracene	mg/kg dry wt	0.050	0.073	0.014	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	0.073	0.096	0.024	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	0.105	0.138	0.031	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	0.104	0.137	0.030	-	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	0.079	0.109	0.027	-	-
Benzo[e]pyrene	mg/kg dry wt	0.042	0.058	0.014	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	0.053	0.065	0.018	-	-
Benzo[k]fluoranthene	mg/kg dry wt	0.027	0.036	< 0.013	-	-
Chrysene	mg/kg dry wt	0.046	0.070	0.015	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.013	< 0.016	< 0.013	-	-
Fluoranthene	mg/kg dry wt	0.107	0.168	0.039	-	-
Fluorene	mg/kg dry wt	< 0.013	< 0.016	< 0.013	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	0.052	0.063	0.017	-	-
Naphthalene	mg/kg dry wt	< 0.07	< 0.08	< 0.07	-	-
Perylene	mg/kg dry wt	0.017	0.023	< 0.013	-	-
Phenanthrene	mg/kg dry wt	0.034	0.088	0.017	-	-
Pyrene	mg/kg dry wt	0.118	0.168	0.038	-	-





Sa	ample Name:	BH44_0.3-0.4 14-Aug-2024	BH44_1.1-1.2 14-Aug-2024	BH44_; 15-Aug		BH44_6.0-6.3 15-Aug-2024	BH44_10.5-10.6 15-Aug-2024
	Lab Number:	3651482.1	3651482.2	36514	182.3	3651482.4	3651482.5
Total Petroleum Hydrocarbons in	n Soil						
C7 - C9	mg/kg dry wt	< 20	< 30	< 2	< 20 -		-
C10 - C14	mg/kg dry wt	< 20	< 20	< 20		-	-
C15 - C36	mg/kg dry wt	< 40	< 40	< 40		-	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 80	< 90	< 80		-	-
9	ample Name:	BH51_0	.5-0.6 15-Aug-2024			BH51_2.0-2.45 15	-Aug-2024
	Lab Number:		3651482.6			3651482.	
Individual Tests							<u> </u>
Dry Matter	g/100g as rcvd		79			61	
Heavy Metals, Screen Level	3 113 11 1		-			-	
Total Recoverable Arsenic	mg/kg dry wt		4			3	
Total Recoverable Cadmium	mg/kg dry wt		< 0.10			< 0.10	
Total Recoverable Chromium	mg/kg dry wt		27			20	
Total Recoverable Copper	mg/kg dry wt		34			8	
Total Recoverable Lead	mg/kg dry wt		62			9.8	
Total Recoverable Nickel	mg/kg dry wt		48			10	
Total Recoverable Zinc	mg/kg dry wt		65			44	
Polycyclic Aromatic Hydrocarbo		Soil*					
Total of Reported PAHs in Soil	mg/kg dry wt	, on	0.7			< 0.4	
1-Methylnaphthalene	mg/kg dry wt		< 0.013			< 0.016	
2-Methylnaphthalene	mg/kg dry wt		< 0.013			< 0.016	
Acenaphthylene	mg/kg dry wt	< 0.013				< 0.016	
Acenaphthene	mg/kg dry wt		< 0.013				
Anthracene	mg/kg dry wt		< 0.013		< 0.016		
Benzo[a]anthracene	mg/kg dry wt		0.057		< 0.016		
Benzo[a]pyrene (BAP)	mg/kg dry wt		0.066		< 0.016 < 0.016		
Benzo[a]pyrene Potency	mg/kg dry wt		0.100			< 0.039	
Equivalency Factor (PEF) NES*							
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt		0.099			< 0.038	
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt		0.083			< 0.016	
Benzo[e]pyrene	mg/kg dry wt		0.038			< 0.016	
Benzo[g,h,i]perylene	mg/kg dry wt		0.043			< 0.016	
Benzo[k]fluoranthene	mg/kg dry wt		0.032			< 0.016	
Chrysene	mg/kg dry wt		0.050			< 0.016	
Dibenzo[a,h]anthracene	mg/kg dry wt		< 0.013			< 0.016	
Fluoranthene	mg/kg dry wt		0.103			< 0.016	
Fluorene	mg/kg dry wt		< 0.013			< 0.016	
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt		0.051		< 0.016		
Naphthalene	mg/kg dry wt	< 0.07			< 0.08		
Perylene	mg/kg dry wt	0.024			< 0.016		
Phenanthrene	mg/kg dry wt	0.017		< 0.016			
Pyrene	mg/kg dry wt		0.110			< 0.016	
Total Petroleum Hydrocarbons is	n Soil						
C7 - C9	mg/kg dry wt		< 20			< 30	
C10 - C14	mg/kg dry wt		< 20			< 20	
C15 - C36	mg/kg dry wt		< 40			< 40	
Total hydrocarbons (C7 - C36)	mg/kg dry wt		< 80			< 90	

Sample Type: Soil

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 Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil					
Test	Method Description	Default Detection Limit	Sample No		
Individual Tests					
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-7		
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1-3, 6-7		
Dry Matter	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	1-3, 6-7		
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	1-3, 6-7		
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	1-3, 6-7		
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.010 - 70 mg/kg dry wt	1-3, 6-7		
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-7		
Total Petroleum Hydrocarbons in Soil					
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	20 mg/kg dry wt	1-3, 6-7		
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-3, 6-7		
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1-3, 6-7		
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1-3, 6-7		

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

Testing was completed between 17-Aug-2024 and 21-Aug-2024. 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.

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

Ara Heron BSc (Tech)



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Certificate of Analysis

Page 1 of 3

(Amended)

SPv2

Client:

Aurecon New Zealand Limited

Andrew Allcock Contact:

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 Lab No: 3655466

22-Aug-2024 **Date Received: Date Reported:** 28-Aug-2024

Quote No: 126272 **Order No:** 126272 Client Referen Submitted By:

ce:	521290-064
	Tiana Hill

Sample Type: Soil						
5	Sample Name:	BH46_0.4-0.5	BH46_1.4-1.6	BH45_0.8-1.0	BH51_5.0-5.45	BH51_8.0-8.45
		19-Aug-2024	19-Aug-2024	19-Aug-2024	15-Aug-2024	15-Aug-2024
	Lab Number:	3655466.1	3655466.2	3655466.3	3655466.4	3655466.5
Individual Tests						
Dry Matter	g/100g as rcvd	78	80	76	-	-
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	3	3	5	< 2	< 2
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	21	20	22	14	23
Total Recoverable Copper	mg/kg dry wt	16	16	26	9	21
Total Recoverable Lead	mg/kg dry wt	27	16.7	47	7.3	8.4
Total Recoverable Nickel	mg/kg dry wt	12	12	18	11	21
Total Recoverable Zinc	mg/kg dry wt	41	43	80	36	52
Polycyclic Aromatic Hydrocarb	ons Screening in S	oil*				
Total of Reported PAHs in Soil	mg/kg dry wt	3.3	< 0.3	2.2	-	-
1-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.013	< 0.013	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.013	< 0.013	< 0.013	-	-
Acenaphthylene	mg/kg dry wt	0.037	< 0.013	0.027	-	-
Acenaphthene	mg/kg dry wt	< 0.013	< 0.013	< 0.013	-	-
Anthracene	mg/kg dry wt	0.051	< 0.013	0.023	-	-
Benzo[a]anthracene	mg/kg dry wt	0.21	0.016	0.147	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	0.173	0.013	0.125	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	mg/kg dry wt	0.30	< 0.030	0.22	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	0.30	< 0.030	0.21	-	-
Benzo[b]fluoranthene + Benzo[fluoranthene	i] mg/kg dry wt	0.30	0.024	0.21	-	-
Benzo[e]pyrene	mg/kg dry wt	0.28	0.021	0.20	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	0.22	0.018	0.165	-	-
Benzo[k]fluoranthene	mg/kg dry wt	0.115	< 0.013	0.080	-	-
Chrysene	mg/kg dry wt	0.21	0.015	0.140	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	0.039	< 0.013	0.028	-	-
Fluoranthene	mg/kg dry wt	0.58	0.047	0.36	-	-
Fluorene	mg/kg dry wt	0.013	< 0.013	< 0.013	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	0.21	0.016	0.154	-	-
Naphthalene	mg/kg dry wt	< 0.07	< 0.07	< 0.07	-	-
Perylene	mg/kg dry wt	0.072	< 0.013	0.053	-	-
Phenanthrene	mg/kg dry wt	0.196	0.013	0.093	-	-
Pyrene	mg/kg dry wt	0.56	0.047	0.38	-	-





Sample Type: Soil						
	Sample Name:	BH46_0.4-0.5 19-Aug-2024	BH46_1.4-1.6 19-Aug-2024	BH45_0.8-1.0 19-Aug-2024	BH51_5.0-5.45 15-Aug-2024	BH51_8.0-8.45 15-Aug-2024
	Lab Number:	3655466.1	3655466.2	3655466.3	3655466.4	3655466.5
Total Petroleum Hydrocarbons	in Soil					
C7 - C9	mg/kg dry wt	< 20	< 20	< 20	-	-
C10 - C14	mg/kg dry wt	< 20	< 20	< 20	-	-
C15 - C36	mg/kg dry wt	< 40	< 40	< 40	-	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 80	< 80	< 80	-	-

	Sample Name:	BH51_12.0-12.33 15-Aug-2024
	Lab Number:	3655466.6
Heavy Metals, Screen Level		
Total Recoverable Arsenic	mg/kg dry wt	2
Total Recoverable Cadmium	mg/kg dry wt	< 0.10
Total Recoverable Chromium	mg/kg dry wt	23
Total Recoverable Copper	mg/kg dry wt	20
Total Recoverable Lead	mg/kg dry wt	5.8
Total Recoverable Nickel	mg/kg dry wt	17
Total Recoverable Zinc	mg/kg dry wt	49

Analyst's Comments

Amended Report: This certificate of analysis replaces report '3655466-SPv1' issued on 28-Aug-2024 at 9:52 am. Reason for amendment: IDs updated.

Summary of Methods

Sample Type: Soil					
Test	Method Description	Default Detection Limit	Sample No		
Individual Tests					
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-6		
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1-3		
Dry Matter	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	1-3		
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	1-3		
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	1-3		
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.010 - 70 mg/kg dry wt	1-3		
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-6		
Total Petroleum Hydrocarbons in Soil					
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	20 mg/kg dry wt	1-3		
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-3		

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1-3
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1-3

Testing was completed between 24-Aug-2024 and 28-Aug-2024. 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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liminon

Kim Harrison MSc



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Page 1 of 3

SPv1

Client: Contact: Aurecon New Zealand Limited

Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149

 Lab No:
 3658963

 Date Received:
 28-Aug-2024

 Date Reported:
 02-Sep-2024

Quote No:

Submitted By:

126272

Order No: Client Reference: 52°

521290-064 Tiana Hill

Sample Type: Soil						
	Comple Name	BH46 2526	DU16 0 5 0 7	BH46 12 0 12 1	BH25 0 2 0 2	DH25 1516
	Sample Name:	BH46_3.5-3.6 23-Aug-2024	BH46_8.5-8.7 23-Aug-2024	BH46_12.0-12.1 23-Aug-2024	BH25_0.2-0.3 26-Aug-2024	BH25_1.5-1.6 26-Aug-2024
	Lab Number:	3658963.1	3658963.2	3658963.3	3658963.4	3658963.5
Individual Tests						
Dry Matter	g/100g as rcvd	74	-	-	69	-
Heavy Metals, Screen Level	0 0		1			
Total Recoverable Arsenic	mg/kg dry wt	5	3	< 2	3	3
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	24	19	28	26	11
Total Recoverable Copper	mg/kg dry wt	22	19	19	30	5
Total Recoverable Lead	mg/kg dry wt	75	5.6	4.4	21	12.4
Total Recoverable Nickel	mg/kg dry wt	18	19	15	48	3
Total Recoverable Zinc	mg/kg dry wt	65	52	51	35	16
Polycyclic Aromatic Hydrocart	oons Screening in S	Soil*	1			1
Total of Reported PAHs in Soi	I mg/kg dry wt	9.7	-	-	23	-
1-Methylnaphthalene	mg/kg dry wt	< 0.013	-	-	0.030	-
2-Methylnaphthalene	mg/kg dry wt	< 0.013	-	-	0.019	-
Acenaphthylene	mg/kg dry wt	0.121	-	-	0.025	-
Acenaphthene	mg/kg dry wt	< 0.013	-	-	0.195	-
Anthracene	mg/kg dry wt	0.25	-	-	0.85	-
Benzo[a]anthracene	mg/kg dry wt	0.76	-	-	1.73	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	0.77	-	-	1.78	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	mg/kg dry wt S*	1.12	-	-	2.6	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	1.11	-	-	2.6	-
Benzo[b]fluoranthene + Benzo fluoranthene	[j] mg/kg dry wt	0.80	-	-	1.81	-
Benzo[e]pyrene	mg/kg dry wt	0.43	-	-	0.97	-
Benzo[g,h,i]perylene	mg/kg dry wt	0.46	-	-	1.06	-
Benzo[k]fluoranthene	mg/kg dry wt	0.32	-	-	0.71	-
Chrysene	mg/kg dry wt	0.66	-	-	1.59	-
Dibenzo[a,h]anthracene	mg/kg dry wt	0.098	-	-	0.23	-
Fluoranthene	mg/kg dry wt	1.79	-	-	3.7	-
Fluorene	mg/kg dry wt	0.050	-	-	0.23	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	0.46	-	-	1.10	-
Naphthalene	mg/kg dry wt	< 0.07	-	-	< 0.08	-
Perylene	mg/kg dry wt	0.172	-	-	0.41	-
Phenanthrene	mg/kg dry wt	0.76	-	-	2.8	-
Pyrene	mg/kg dry wt	1.75	-	-	4.0	-





Sample Type: Soil						
S	ample Name:	BH46_3.5-3.6 23-Aug-2024	BH46_8.5-8.7 23-Aug-2024	BH46_12.0-12.1 23-Aug-2024	BH25_0.2-0.3 26-Aug-2024	BH25_1.5-1.6 26-Aug-2024
	Lab Number:	3658963.1	3658963.2	3658963.3	3658963.4	3658963.5
Total Petroleum Hydrocarbons i	n Soil					
C7 - C9	mg/kg dry wt	< 20	-	-	< 30	-
C10 - C14	mg/kg dry wt	< 20	-	-	< 20	-
C15 - C36	mg/kg dry wt	< 40	-	-	141	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 80	-	-	143	-



Test	Method Description	Default Detection Limit	Sample No
Individual Tests	monios Bootiphon	Doladit Dototion Limit	- Campio No
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-5
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1, 4
Dry Matter	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, 4
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	1, 4
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	1, 4
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.010 - 70 mg/kg dry wt	1, 4

Sample Type: Soil					
Test	Method Description	Default Detection Limit	Sample No		
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-5		
Total Petroleum Hydrocarbons in Soil					
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	4		
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	20 mg/kg dry wt	1, 4		
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1, 4		
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1, 4		
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1, 4		

Testing was completed between 29-Aug-2024 and 02-Sep-2024. 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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Hummon

Kim Harrison MSc



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Page 1 of 3

SPv1

Client: Contact: Aurecon New Zealand Limited

ntact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149

 Lab No:
 3664138

 Date Received:
 04-Sep-2024

 Date Reported:
 09-Sep-2024

Quote No: Order No:

126272

Client Reference: 521290-064 Submitted By: 521290-064

Sample Type: Soil			
S	ample Name:	BH06_0.4-0.5 29-Aug-2024	BH06_1.4-1.5 29-Aug-2024
	Lab Number:	3664138.1	3664138.2
Individual Tests	1		
Dry Matter	g/100g as rcvd	72	-
Heavy Metals, Screen Level			
Total Recoverable Arsenic	mg/kg dry wt	5	3
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	22	23
Total Recoverable Copper	mg/kg dry wt	26	35
Total Recoverable Lead	mg/kg dry wt	89	8.9
Total Recoverable Nickel	mg/kg dry wt	22	5
Total Recoverable Zinc	mg/kg dry wt	68	30
Polycyclic Aromatic Hydrocarbo	ns Screening in So	il*	
Total of Reported PAHs in Soil	mg/kg dry wt	3.4	-
1-Methylnaphthalene	mg/kg dry wt	< 0.014	-
2-Methylnaphthalene	mg/kg dry wt	< 0.014	-
Acenaphthylene	mg/kg dry wt	0.040	-
Acenaphthene	mg/kg dry wt	< 0.014	-
Anthracene	mg/kg dry wt	0.057	-
Benzo[a]anthracene	mg/kg dry wt	0.22	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	0.35	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	0.49	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	0.49	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	0.36	-
Benzo[e]pyrene	mg/kg dry wt	0.199	-
Benzo[g,h,i]perylene	mg/kg dry wt	0.27	-
Benzo[k]fluoranthene	mg/kg dry wt	0.141	-
Chrysene	mg/kg dry wt	0.20	-
Dibenzo[a,h]anthracene	mg/kg dry wt	0.041	-
Fluoranthene	mg/kg dry wt	0.44	-
Fluorene	mg/kg dry wt	< 0.014	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	0.27	-
Naphthalene	mg/kg dry wt	< 0.07	-
Perylene	mg/kg dry wt	0.092	-
Phenanthrene	mg/kg dry wt	0.129	-
Pyrene	mg/kg dry wt	0.51	-





Sample Type: Soil					
!	Sample Name:	BH06_0.4-0.5 29-Aug-2024	BH06_1.4-1.5 29-Aug-2024		
	Lab Number:	3664138.1	3664138.2		
Total Petroleum Hydrocarbons in Soil					
C7 - C9	mg/kg dry wt	< 20	-		
C10 - C14	mg/kg dry wt	< 20	-		
C15 - C36	mg/kg dry wt	< 40	-		
Total hydrocarbons (C7 - C36)) mg/kg dry wt	< 80	-		

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-2
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1
Dry Matter	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
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	1
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	1
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.010 - 70 mg/kg dry wt	1
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-2
Total Petroleum Hydrocarbons in Soil			
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	20 mg/kg dry wt	1
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1

Testing was completed between 05-Sep-2024 and 09-Sep-2024. 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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Ara Heron BSc (Tech)



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Page 1 of 3

SPv1

Client: Contact: Aurecon New Zealand Limited

ntact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149

 Lab No:
 3670643

 Date Received:
 12-Sep-2024

 Date Reported:
 16-Sep-2024

Quote No: Order No:

Order No: Client Reference: 521290-064

126272

Submitted By: 521290-064

Sample Type: Soil						
	Sample Name:	BH36_0.6-0.7	BH36_2.5-2.6	BH06_12.0-12.1	BH25_16.5-16.6	BH17_1.5-1.95
	oumpro reamor	12-Sep-2024	12-Sep-2024	12-Sep-2024	12-Sep-2024	05-Sep-2024
	Lab Number:	3670643.1	3670643.2	3670643.3	3670643.4	3670643.5
Individual Tests						
Dry Matter	g/100g as rcvd	66	-	-	-	-
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	3	4	3	< 2
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	14	15	20	10	9
Total Recoverable Copper	mg/kg dry wt	4	9	23	11	3
Total Recoverable Lead	mg/kg dry wt	6.5	6.3	6.3	4.7	7.3
Total Recoverable Nickel	mg/kg dry wt	4	< 2	33	11	2
Total Recoverable Zinc	mg/kg dry wt	5	7	70	36	7
Polycyclic Aromatic Hydrocark	ons Screening in S	oil*				
Total of Reported PAHs in Soi	l mg/kg dry wt	< 0.4	-	-	-	-
1-Methylnaphthalene	mg/kg dry wt	< 0.015	-	-	-	-
2-Methylnaphthalene	mg/kg dry wt	< 0.015	-	-	-	-
Acenaphthylene	mg/kg dry wt	< 0.015	-	-	-	-
Acenaphthene	mg/kg dry wt	< 0.015	-	-	-	-
Anthracene	mg/kg dry wt	< 0.015	-	-	-	-
Benzo[a]anthracene	mg/kg dry wt	< 0.015	-	-	-	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.015	-	-	-	-
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	mg/kg dry wt S*	< 0.036	-	-	-	-
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 0.036	-	-	-	-
Benzo[b]fluoranthene + Benzo fluoranthene	[j] mg/kg dry wt	< 0.015	-	-	-	-
Benzo[e]pyrene	mg/kg dry wt	< 0.015	-	-	-	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.015	-	-	-	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.015	-	-	-	-
Chrysene	mg/kg dry wt	< 0.015	-	-	-	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.015	-	-	-	-
Fluoranthene	mg/kg dry wt	< 0.015	-	-	-	-
Fluorene	mg/kg dry wt	< 0.015	-	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.015	-	-	-	-
Naphthalene	mg/kg dry wt	< 0.08	-	-	-	-
Perylene	mg/kg dry wt	< 0.015	-	-	-	-
Phenanthrene	mg/kg dry wt	< 0.015	-	-	-	-
Pyrene	mg/kg dry wt	< 0.015	-	-	-	-





Sample Type: Soil						
S	ample Name:	BH36_0.6-0.7 12-Sep-2024	BH36_2.5-2.6 12-Sep-2024	BH06_12.0-12.1 12-Sep-2024	BH25_16.5-16.6 12-Sep-2024	BH17_1.5-1.95 05-Sep-2024
	Lab Number:	3670643.1	3670643.2	3670643.3	3670643.4	3670643.5
Total Petroleum Hydrocarbons	in Soil					
C7 - C9	mg/kg dry wt	< 30	-	-	-	-
C10 - C14	mg/kg dry wt	< 20	-	-	-	-
C15 - C36	mg/kg dry wt	< 40	-	-	-	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 90	-	-	-	-

	Sample Name:	BH17_7.5-7.95 05-Sep-2024	BH17_13.5-13.64 06-Sep-2024
	Lab Number:	3670643.6	3670643.7
Heavy Metals, Screen Level			
Total Recoverable Arsenic	mg/kg dry wt	2	< 2
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	19	26
Total Recoverable Copper	mg/kg dry wt	25	16
Total Recoverable Lead	mg/kg dry wt	7.7	5.2
Total Recoverable Nickel	mg/kg dry wt	16	22
Total Recoverable Zinc	mg/kg dry wt	23	40

Sample Type: Soil						
Test	Method Description	Default Detection Limit	Sample No			
Individual Tests						
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-7			
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	1			
Dry Matter	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			
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	1			
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	1			
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.010 - 70 mg/kg dry wt	1			
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-7			
Total Petroleum Hydrocarbons in Soil						
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	20 mg/kg dry wt	1			
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1			
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1			
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1			

Testing was completed between 13-Sep-2024 and 16-Sep-2024. 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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Page 1 of 4

SPv1

Client: Contact: Aurecon New Zealand Limited

ntact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149

 Lab No:
 3674838

 Date Received:
 18-Sep-2024

 Date Reported:
 23-Sep-2024

Quote No: Order No:

126272

Client Reference: 521290-64 Submitted By: 521290-64

Sample Type: Soil				
Sa	ample Name:	BH38_1.1-1.2 18-Sep-2024	BH14_0.6-0.7 16-Sep-2024	
	Lab Number:	3674838.1	3674838.2	
Individual Tests				
Dry Matter	g/100g as rcvd	79	70	
Heavy Metals, Screen Level				
Total Recoverable Arsenic	mg/kg dry wt	< 2	8	
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	
Total Recoverable Chromium	mg/kg dry wt	7	23	
Total Recoverable Copper	mg/kg dry wt	4	18	
Total Recoverable Lead	mg/kg dry wt	16.9	114	
Total Recoverable Nickel	mg/kg dry wt	2	24	
Total Recoverable Zinc	mg/kg dry wt	10	46	
BTEX in Soil by Headspace GC	-MS			
Benzene	mg/kg dry wt	< 0.06	< 0.07	
Toluene	mg/kg dry wt	< 0.06	< 0.07	
Ethylbenzene	mg/kg dry wt	< 0.06	< 0.07	
m&p-Xylene	mg/kg dry wt	< 0.11	< 0.13	
o-Xylene	mg/kg dry wt	< 0.06	< 0.07	
Polycyclic Aromatic Hydrocarbon	ns Screening in S	oil*		
Total of Reported PAHs in Soil	mg/kg dry wt	-	2.4	
1-Methylnaphthalene	mg/kg dry wt	-	< 0.014	
2-Methylnaphthalene	mg/kg dry wt	-	< 0.014	
Acenaphthylene	mg/kg dry wt	-	0.019	
Acenaphthene	mg/kg dry wt	-	< 0.014	
Anthracene	mg/kg dry wt	-	0.026	
Benzo[a]anthracene	mg/kg dry wt	-	0.175	
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	0.25	
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	mg/kg dry wt	-	0.36	
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	0.35	
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	-	0.23	
Benzo[e]pyrene	mg/kg dry wt	-	0.134	
Benzo[g,h,i]perylene	mg/kg dry wt	-	0.180	
Benzo[k]fluoranthene	mg/kg dry wt	-	0.102	
Chrysene	mg/kg dry wt	-	0.164	
Dibenzo[a,h]anthracene	mg/kg dry wt	-	0.033	
Fluoranthene	mg/kg dry wt	-	0.33	
Fluorene	mg/kg dry wt	-	< 0.014	
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	0.168	
Naphthalene	mg/kg dry wt	-	< 0.07	





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Sample Type: Soil			
Sa	mple Name:	BH38_1.1-1.2 18-Sep-2024	BH14_0.6-0.7 16-Sep-2024
	ab Number:	3674838.1	3674838.2
Polycyclic Aromatic Hydrocarbon		oil*	
Perylene	mg/kg dry wt	-	0.063
Phenanthrene	mg/kg dry wt	-	0.110
Pyrene	mg/kg dry wt	-	0.41
Haloethers in SVOC Soil Sample	s by GC-MS		
Bis(2-chloroethoxy) methane	mg/kg dry wt	< 0.5	-
Bis(2-chloroethyl)ether	mg/kg dry wt	< 0.5	-
Bis(2-chloroisopropyl)ether	mg/kg dry wt	< 0.5	-
4-Bromophenyl phenyl ether	mg/kg dry wt	< 0.4	-
4-Chlorophenyl phenyl ether	mg/kg dry wt	< 0.5	-
Nitrogen containing compounds	in SVOC Soil Sar	mples by GC-MS	
2,4-Dinitrotoluene	mg/kg dry wt	< 1.0	-
2,6-Dinitrotoluene	mg/kg dry wt	< 1.0	-
Nitrobenzene	mg/kg dry wt	< 0.5	-
N-Nitrosodi-n-propylamine	mg/kg dry wt	< 0.8	-
N-Nitrosodiphenylamine + Diphenylamine	mg/kg dry wt	< 0.8	-
Organochlorine Pesticides in SV0	OC Soil Samples	by GC-MS	1
Aldrin	mg/kg dry wt	< 0.5	-
alpha-BHC	mg/kg dry wt	< 0.5	-
beta-BHC	mg/kg dry wt	< 0.5	-
delta-BHC	mg/kg dry wt	< 0.5	-
gamma-BHC (Lindane)	mg/kg dry wt	< 0.5	-
4,4'-DDD	mg/kg dry wt	< 0.5	-
4,4'-DDE	mg/kg dry wt	< 0.5	-
4,4'-DDT	mg/kg dry wt	< 1.0	-
Dieldrin	mg/kg dry wt	< 0.5	-
Endosulfan I	mg/kg dry wt	< 1.0	-
Endosulfan II	mg/kg dry wt	< 2	-
Endosulfan sulphate	mg/kg dry wt	< 1.0	-
Endrin	mg/kg dry wt	< 0.8	-
Endrin ketone	mg/kg dry wt	< 1.0	-
Heptachlor	mg/kg dry wt	< 0.5	-
Heptachlor epoxide	mg/kg dry wt	< 0.5	-
Hexachlorobenzene	mg/kg dry wt	< 0.5	-
Polycyclic Aromatic Hydrocarbon	s in SVOC Soil S	amples by GC-MS*	1
Acenaphthene	mg/kg dry wt	< 0.5	-
Acenaphthylene	mg/kg dry wt	< 0.5	-
Anthracene	mg/kg dry wt	< 0.5	-
Benzo[a]anthracene	mg/kg dry wt	< 0.5	-
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.5	-
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.5	-
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.5	-
Benzo[k]fluoranthene	mg/kg dry wt	< 0.5	-
1&2-Chloronaphthalene	mg/kg dry wt	< 0.5	-
Chrysene	mg/kg dry wt	< 0.5	-
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.5	-
Fluoranthene	mg/kg dry wt	< 0.5	-
Fluorene	mg/kg dry wt	< 0.5	-
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.5	-
2-Methylnaphthalene	mg/kg dry wt	< 0.5	-
Naphthalene	mg/kg dry wt	< 0.5	-
Phenanthrene	mg/kg dry wt	< 0.5	-
Pyrene	mg/kg dry wt	< 0.5	-
Benzo[a]pyrene Potency	mg/kg dry wt	< 1.3	-
Equivalency Factor (PEF) NES*			

Sample Type: Soil			
Sa	ample Name:	BH38_1.1-1.2 18-Sep-2024	BH14_0.6-0.7 16-Sep-2024
	Lab Number:	3674838.1	3674838.2
Polycyclic Aromatic Hydrocarbon	ns in SVOC Soil S	amples by GC-MS*	
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	< 1.3	•
Phenols in SVOC Soil Samples	by GC-MS		
4-Chloro-3-methylphenol	mg/kg dry wt	< 5	-
2-Chlorophenol	mg/kg dry wt	< 1.0	-
2,4-Dichlorophenol	mg/kg dry wt	< 1.0	-
2,4-Dimethylphenol	mg/kg dry wt	< 3	-
3 & 4-Methylphenol (m- + p-cresol)	mg/kg dry wt	< 3	-
2-Methylphenol (o-cresol)	mg/kg dry wt	< 1.0	-
2-Nitrophenol	mg/kg dry wt	< 5	-
Pentachlorophenol (PCP)	mg/kg dry wt	< 30	-
Phenol	mg/kg dry wt	< 1.0	-
2,4,5-Trichlorophenol	mg/kg dry wt	< 1.0	-
2,4,6-Trichlorophenol	mg/kg dry wt	< 1.0	-
Plasticisers in SVOC Soil Samp	les by GC-MS		
Bis(2-ethylhexyl)phthalate	mg/kg dry wt	< 5	-
Butylbenzylphthalate	mg/kg dry wt	< 1.0	-
Di(2-ethylhexyl)adipate	mg/kg dry wt	< 1.0	-
Diethylphthalate	mg/kg dry wt	< 1.0	-
Dimethylphthalate	mg/kg dry wt	< 1.0	-
Di-n-butylphthalate	mg/kg dry wt	< 1.0	-
Di-n-octylphthalate	mg/kg dry wt	< 1.0	-
Other Halogenated compounds	in SVOC Soil Sam	ples by GC-MS	
1,2-Dichlorobenzene	mg/kg dry wt	< 0.8	-
1,3-Dichlorobenzene	mg/kg dry wt	< 0.8	-
1,4-Dichlorobenzene	mg/kg dry wt	< 0.8	-
Hexachlorobutadiene	mg/kg dry wt	< 0.8	-
Hexachloroethane	mg/kg dry wt	< 0.8	-
1,2,4-Trichlorobenzene	mg/kg dry wt	< 0.5	-
Other compounds in SVOC Soil	Samples by GC-M	18	
Benzyl alcohol	mg/kg dry wt	< 10	-
Carbazole	mg/kg dry wt	< 0.5	-
Dibenzofuran	mg/kg dry wt	< 0.5	-
Isophorone	mg/kg dry wt	< 0.5	-
Total Petroleum Hydrocarbons in	n Soil		
C7 - C9	mg/kg dry wt	< 20	< 20
C10 - C14	mg/kg dry wt	< 20	< 20
C15 - C36	mg/kg dry wt	< 40	< 40
Total hydrocarbons (C7 - C36)	mg/kg dry wt	< 80	< 80

Sample Type: Soil					
Test	Method Description	Default Detection Limit	Sample No		
Individual Tests					
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-2		
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	2		

Sample Type: Soil		D (1/D (1/2))	
Test	Method Description	Default Detection Limit	Sample No
Dry Matter	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
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	2
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	2
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-2
BTEX in Soil by Headspace GC-MS	Solvent extraction, Headspace GC-MS analysis. Tested on as received sample. In-house based on US EPA 8260 and 5021.	0.05 - 0.10 mg/kg dry wt	1-2
Polycyclic Aromatic Hydrocarbons Screening in Soil*	Sonication extraction, GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.010 - 0.05 mg/kg dry wt	2
Semivolatile Organic Compounds Screening in Soil by GC-MS	Sonication extraction, GC-MS analysis. Tested on as received sample. In-house based on US EPA 8270.	0.024 - 30 mg/kg dry wt	1
Total Petroleum Hydrocarbons in Soil			
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	20 mg/kg dry wt	1-2
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-2
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1-2
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1-2

Testing was completed between 19-Sep-2024 and 23-Sep-2024. 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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Ara Heron BSc (Tech)



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Page 1 of 3

SPv1

Client: Contact: Aurecon New Zealand Limited

ı**ct:** Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149

 Lab No:
 3683703

 Date Received:
 01-Oct-2024

 Date Reported:
 04-Oct-2024

Quote No: 126272

Order No:

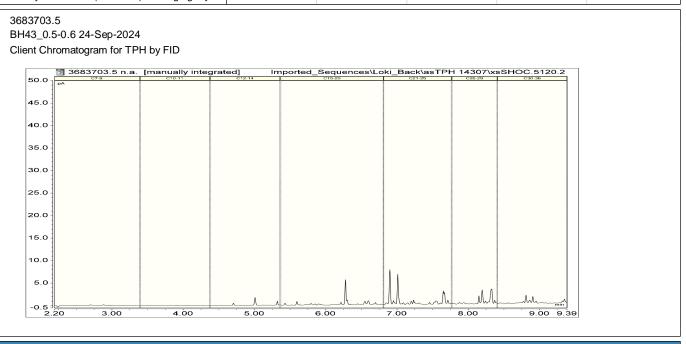
Client Reference: 521290-064 Submitted By: 521290-064

Sample Type: Soil						
	Sample Name:	BH36_5.45	BH14_10.0-10.1	BH14_2.5-2.6	BH43_2.3	BH43_0.5-0.6
· ·	Sample Name.	12-Sep-2024	30-Sep-2024	30-Sep-2024	25-Sep-2024	24-Sep-2024
	Lab Number:	3683703.1	3683703.2	3683703.3	3683703.4	3683703.5
Individual Tests						
Dry Matter	g/100g as rcvd	-	-	-	-	75
Heavy Metals, Screen Level	-					1
Total Recoverable Arsenic	mg/kg dry wt	5	2	< 2	< 2	5
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	10	20	7	35	16
Total Recoverable Copper	mg/kg dry wt	34	10	2	23	17
Total Recoverable Lead	mg/kg dry wt	10.6	3.9	3.7	17.2	92
Total Recoverable Nickel	mg/kg dry wt	20	10	< 2	14	9
Total Recoverable Zinc	mg/kg dry wt	123	42	5	64	76
Polycyclic Aromatic Hydrocarb	ons Screening in S	Soil*				
Total of Reported PAHs in Soi	I mg/kg dry wt	-	-	-	-	45
1-Methylnaphthalene	mg/kg dry wt	-	-	-	-	0.020
2-Methylnaphthalene	mg/kg dry wt	-	-	-	-	< 0.013
Acenaphthylene	mg/kg dry wt	-	-	-	-	0.54
Acenaphthene	mg/kg dry wt	-	-	-	-	0.057
Anthracene	mg/kg dry wt	-	-	-	-	1.13
Benzo[a]anthracene	mg/kg dry wt	-	-	-	-	3.0
Benzo[a]pyrene (BAP)	mg/kg dry wt	-	-	-	-	3.4
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES	mg/kg dry wt S*	-	-	-	-	4.9
Benzo[a]pyrene Toxic Equivalence (TEF)*	mg/kg dry wt	-	-	-	-	4.9
Benzo[b]fluoranthene + Benzo fluoranthene	[j] mg/kg dry wt	-	-	-	-	3.5
Benzo[e]pyrene	mg/kg dry wt	-	-	-	-	1.80
Benzo[g,h,i]perylene	mg/kg dry wt	-	-	-	-	2.3
Benzo[k]fluoranthene	mg/kg dry wt	-	-	-	-	1.27
Chrysene	mg/kg dry wt	-	-	-	-	2.5
Dibenzo[a,h]anthracene	mg/kg dry wt	-	-	-	-	0.42
Fluoranthene	mg/kg dry wt	-	-	-	-	7.8
Fluorene	mg/kg dry wt	-	-	-	-	0.42
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	-	-	-	-	2.2
Naphthalene	mg/kg dry wt	-	-	-	-	< 0.07
Perylene	mg/kg dry wt	-	-	-	-	0.81
Phenanthrene	mg/kg dry wt	-	-	-	-	6.2
Pyrene	mg/kg dry wt	-	-	-	-	7.8





Sample Type: Soil						
S	ample Name:	BH36_5.45 12-Sep-2024	BH14_10.0-10.1 30-Sep-2024	BH14_2.5-2.6 30-Sep-2024	BH43_2.3 25-Sep-2024	BH43_0.5-0.6 24-Sep-2024
	Lab Number:	3683703.1	3683703.2	3683703.3	3683703.4	3683703.5
Total Petroleum Hydrocarbons i	n Soil					
C7 - C9	mg/kg dry wt	-	-	-	-	< 20
C10 - C14	mg/kg dry wt	-	-	-	-	< 20
C15 - C36	mg/kg dry wt	-	-	-	-	177
Total hydrocarbons (C7 - C36)	mg/kg dry wt	-	-	-	-	179



Sample Type: Soil Test	Method Description	Default Detection Limit	Sample No
	Method Description	Default Detection Limit	Sample NC
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-5
Total of Reported PAHs in Soil	Sonication extraction, GC-MS/MS analysis. In-house based on US EPA 8270.	0.03 mg/kg dry wt	5
Dry Matter	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	5
Benzo[a]pyrene Potency Equivalency Factor (PEF) NES*	BaP Potency Equivalence calculated from; Benzo(a)anthracene x 0.1 + Benzo(b)fluoranthene x 0.1 + Benzo(j)fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Benzo(a)pyrene x 1.0 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Fluoranthene x 0.01 + Indeno(1,2,3-c,d)pyrene x 0.1. Ministry for the Environment. 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health. Wellington: Ministry for the Environment.	0.024 mg/kg dry wt	5
Benzo[a]pyrene Toxic Equivalence (TEF)*	Benzo[a]pyrene Toxic Equivalence (TEF) calculated from; Benzo[a]pyrene x 1.0 + Benzo(a)anthracene x 0.1 + Benzo(b) fluoranthene x 0.1 + Benzo(k)fluoranthene x 0.1 + Chrysene x 0.01 + Dibenzo(a,h)anthracene x 1.0 + Indeno(1,2,3-c,d)pyrene x 0.1. Guidelines for assessing and managing contaminated gasworks sites in New Zealand (GMG) (MfE, 1997).	0.024 mg/kg dry wt	5
TPH Oil Industry Profile + PAHscreen	Sonication extraction, GC-FID and GC-MS/MS analysis. Tested on as received sample. In-house based on US EPA 8015 and US EPA 8270.	0.010 - 70 mg/kg dry wt	5

Sample Type: Soil						
Test	Method Description	Default Detection Limit	Sample No			
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-5			
Total Petroleum Hydrocarbons in Soil						
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	5			
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	20 mg/kg dry wt	5			
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	5			
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	5			
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	5			

Testing was completed between 02-Oct-2024 and 04-Oct-2024. 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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Ara Heron BSc (Tech)



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Page 1 of 2

SPv1

Client: Contact:

Aurecon New Zealand Limited

ontact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 Lab No: Date Received: Date Reported: 3684098 01-Oct-2024

08-Oct-2024

Quote No: Order No:

126272

Client Reference: 521
Submitted By: Tial

521290-064 Tiana Hill

Sample Type: Soil						
	Sample Name:	QAQC_01 29-Aug-2024	QAQC_0 05-Jul-20	_	QAQC_04 26-Aug-2024	QAQC_05
	Lab Number:	3684098.1	3684098.	2 3684098.3	3684098.4	3684098.5
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	5	2	3	< 2	< 2
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	28	15	22	7	14
Total Recoverable Copper	mg/kg dry wt	30	10	9	3	4
Total Recoverable Lead	mg/kg dry wt	12.6	20	6.4	12.8	7.4
Total Recoverable Nickel	mg/kg dry wt	8	11	4	2	3
Total Recoverable Zinc	mg/kg dry wt	35	41	16	12	9
	Sample Name:	QAQC_	06	QAQC_07	C)AQC_08

	Sample Name:	QAQC_06	QAQC_07	QAQC_08
	Lab Number:	3684098.6	3684098.7	3684098.8
Heavy Metals, Screen Level				
Total Recoverable Arsenic	mg/kg dry wt	9	4	< 2
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	9	21	27
Total Recoverable Copper	mg/kg dry wt	3	20	21
Total Recoverable Lead	mg/kg dry wt	14.5	9.2	13.6
Total Recoverable Nickel	mg/kg dry wt	5	< 2	13
Total Recoverable Zinc	mg/kg dry wt	6	9	55

Summary of Methods

Sample Type: Soil						
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%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-8			
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-8			





Testing was completed between 02-Oct-2024 and 08-Oct-2024. 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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General

Kim Harrison MSc



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Page 1 of 1

Client: Aurecon New Zealand Limited

Contact: Hannah Sussex

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 Lab No: **Date Received:** 3694107

15-Oct-2024

Date Reported: Quote No:

18-Oct-2024

126272

Order No:

Submitted By:

Client Reference:

Hannah Sussex

Sample Type: Soil		
	Sample Name:	BH38_6.9-7.0 15-Oct-2024
	Lab Number:	3694107.1
Heavy Metals, Screen Level		
Total Recoverable Arsenic	mg/kg dry wt	4
Total Recoverable Cadmium	mg/kg dry wt	< 0.10
Total Recoverable Chromium	mg/kg dry wt	18
Total Recoverable Copper	mg/kg dry wt	27
Total Recoverable Lead	mg/kg dry wt	8.1
Total Recoverable Nickel	mg/kg dry wt	18
Total Recoverable Zinc	mg/kg dry wt	64

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 Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil						
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%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1			
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1			

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

Testing was completed between 16-Oct-2024 and 18-Oct-2024. 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







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 ⊕ www.hill-labs.co.nz

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Page 1 of 2

A2Pv1

Client: Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 2292 Tauranga 3140

 Lab No:
 3583099

 Date Received:
 16-May-2024

 Date Reported:
 20-May-2024

Quote No: Order No:

126272

Client Reference: Add. Client Ref:

521290-064 Sampled: 13/05/24

Submitted Bv: Tiana Hill

Sample Type: Soil			
Sample	Name:	BH30_0.23m	BH30_0.62m
Lab N	umber:	3583099.1	3583099.2
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001
As Received Weight	g	612.9	814.1
Dry Weight	g	504.4	559.4
Moisture*	%	18	31
Sample Fraction >10mm*	g dry wt	176.3	< 0.1
Sample Fraction <10mm to >2mm*	g dry wt	257.9	460.0
Sample Fraction <2mm*	g dry wt	69.7	98.3
<2mm Subsample Weight*	g dry wt	69.7	49.3
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)*	g dry wt	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001

Glossary of Terms

- · Loose fibres (Minor) One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- Loose fibres (Major) Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- ACM Debris (Minor) One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- ACM Debris (Major) Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- Unknown Mineral Fibres Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
- Trace Trace levels of asbestos, as defined by AS4964-2004.

For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil. https://www.branz.co.nz/asbestos

The following assumptions have been made:

- 1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
- 2. The weight of asbestos in the sample is unaffected by the ashing process.

Results are representative of the sample provided to Hill Laboratories only.





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 Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
New Zealand Guidelines Semi Quantitative	ve Asbestos in Soil		
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1-2
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1-2
Moisture*	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1-2
Sample Fraction >10mm*	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-2
Sample Fraction <10mm to >2mm*	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-2
Sample Fraction <2mm*	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-2
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-2
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-2
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-2
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2
Weight of Asbestos as Fibrous Asbestos (Friable)*	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-2
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-2
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2

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

 $Testing \ was \ completed \ on \ 20-May-2024. \ \ For \ completion \ dates \ of \ individual \ analyses \ please \ contact \ the \ laboratory.$

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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Danielle Carter BSc, PGDipSci, MSc Laboratory Technician - Asbestos



R J Hill Laboratories Limited Ground Fl. 28 Heather Street Parnell Auckland 1052 New Zealand

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Page 1 of 2

A2Pv1

Client: Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 2292 Tauranga 3140 Lab No: 3621286 **Date Received: Date Reported:**

05-Jul-2024

11-Jul-2024 126272

Quote No: Order No:

521290-064

Client Reference: Add. Client Ref:

Sampled: 04/07/24

Submitted By: Tiana Hill

Sample Type: Soil					
Sample	Name:	BH29_0.05-0.2	BH48_0.05-0.2	BH10_0.4-0.5	BH10_1.0-1.1
Lab N	lumber:	3621286.1	3621286.2	3621286.4	3621286.5
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001
As Received Weight	g	723.2	804.6	624.3	1,025.4
Dry Weight	g	540.1	626.6	503.2	714.1
Moisture*	%	25	22	19	30
Sample Fraction >10mm*	g dry wt	55.6	94.9	48.1	122.7
Sample Fraction <10mm to >2mm*	g dry wt	313.6	399.6	352.9	408.5
Sample Fraction <2mm*	g dry wt	170.6	131.6	101.8	182.2
<2mm Subsample Weight*	g dry wt	51.5	54.7	53.7	52.9
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001

Glossary of Terms

- · Loose fibres (Minor) One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- Loose fibres (Major) Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- ACM Debris (Minor) One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- ACM Debris (Major) Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- Unknown Mineral Fibres Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
- Trace Trace levels of asbestos, as defined by AS4964-2004.

For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil. https://www.branz.co.nz/asbestos

The following assumptions have been made:

- 1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
- 2. The weight of asbestos in the sample is unaffected by the ashing process.

Results are representative of the sample provided to Hill Laboratories only.





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.

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 Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
New Zealand Guidelines Semi Quantitati	ve Asbestos in Soil		
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1-2, 4-5
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1-2, 4-5
Moisture*	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1-2, 4-5
Sample Fraction >10mm*	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-2, 4-5
Sample Fraction <10mm to >2mm*	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-2, 4-5
Sample Fraction <2mm*	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-2, 4-5
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-2, 4-5
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-2, 4-5
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-2, 4-5
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2, 4-5
Weight of Asbestos as Fibrous Asbestos (Friable)*	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-2, 4-5
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2, 4-5
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-2, 4-5
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2, 4-5
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2, 4-5

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

Testing was completed on 11-Jul-2024. 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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Mahaleel (May) Alfante BSc, PGDipSci Laboratory Technician - Asbestos

May alfante



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 ★ www.hill-labs.co.nz

Certificate of Analysis

Page 1 of 2

A2Pv1

Client: Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 2292 Tauranga 3140 **Lab No:** 3624326

Date Received: 10-Jul-2024 Date Reported: 12-Jul-2024

Quote No: Order No:

126272

Client Reference: 521290-064 Add. Client Ref: 521290-064 Sampled: 8/07/24

Submitted Bv: Tiana Hill

Sample Type: Building Material							
Sample Name	Lab Number	Sample Category	Sample Weight on receipt (g)	Asbestos Presence / Absence	Description of Asbestos in Non Homogeneous Samples		
BH49_B1 0.35m / BH49	3624326.1	Fibre Board	10.61	Amosite (Brown Asbestos) detected. Chrysotile (White Asbestos) detected.	N/A		

Glossary of Terms

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- ACM Debris (Major) Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- Unknown Mineral Fibres Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
- Trace Trace levels of asbestos, as defined by AS4964-2004.

For further details, please contact the Asbestos Team.

Summary of Methods

Sample Type: Building Material					
Test	Method Description	Default Detection Limit	Sample No		
Asbestos in Bulk Material			•		
Sample Category	Assessment of sample type. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	-	1		
Sample Weight on receipt	Sample weight (approximate). Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.01 g	1		
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1		
Description of Asbestos in Non Homogeneous Samples	Form, dimensions and/or weight of asbestos fibres present. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	-	1		





Testing was completed between 11-Jul-2024 and 12-Jul-2024. 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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Alexa Badenhorst BSc (Hons) Team Leader - Asbestos



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Page 1 of 2

A2Pv1

Client: Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 2292 Tauranga 3140 **Lab No:** 3624327 **Date Received:** 10-Jul-2024

Date Reported: 12-Jul-2024 Quote No: 126272

Quote No: Order No:

Client Reference: 5212 Add. Client Ref: Sam

521290-064 Sampled: 8/07/24

Submitted Bv: Tiana Hill

Sample Type: Soil			
Sample	Name:	BH49_0.05-0.2	BH49_0.3-0.4
Lab N	umber:	3624327.1	3624327.2
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001
As Received Weight	g	721.0	818.1
Dry Weight	g	501.6	642.7
Moisture*	%	30	21
Sample Fraction >10mm*	g dry wt	66.4	195.1
Sample Fraction <10mm to >2mm*	g dry wt	357.6	372.9
Sample Fraction <2mm*	g dry wt	77.3	74.1
<2mm Subsample Weight*	g dry wt	54.1	52.1
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)*	g dry wt	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001

Glossary of Terms

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- Trace Trace levels of asbestos, as defined by AS4964-2004.

For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil. https://www.branz.co.nz/asbestos

The following assumptions have been made:

- 1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
- 2. The weight of asbestos in the sample is unaffected by the ashing process.

Results are representative of the sample provided to Hill Laboratories only.





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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 Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
New Zealand Guidelines Semi Quantitati	ve Asbestos in Soil		
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1-2
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1-2
Moisture*	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1-2
Sample Fraction >10mm*	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-2
Sample Fraction <10mm to >2mm*	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-2
Sample Fraction <2mm*	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-2
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-2
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-2
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-2
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2
Weight of Asbestos as Fibrous Asbestos (Friable)*	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-2
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-2
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2

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

Testing was completed on 12-Jul-2024. 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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Danielle Carter BSc, PGDipSci, MSc Laboratory Technician - Asbestos



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Certificate of Analysis

Page 1 of 2

A2Pv1

Client: Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 2292 Tauranga 3140

 Lab No:
 3626399

 Date Received:
 12-Jul-2024

 Date Reported:
 16-Jul-2024

Quote No: Order No:

521290-064

126272

Client Reference: Add. Client Ref:

Sampled: 10/07/24

Submitted Bv: Tiana Hill

Sample Type: Soil				
Sample N	ame:	BH13_0.4-0.5		
Lab Nun	nber:	3626399.2		
Asbestos Presence / Absence		Asbestos NOT detected.		
Description of Asbestos Form		-		
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001		
Combined Fibrous Asbestos + Sample*	% w/w	< 0.001		
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001		
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001		
As Received Weight	g	686.2		
Dry Weight	g	524.2		
Moisture*	%	24		
Sample Fraction >10mm* g	dry wt	76.1		
Sample Fraction <10mm to >2mm* g	dry wt	314.1		
Sample Fraction <2mm* g	dry wt	133.6		
<2mm Subsample Weight* g	dry wt	53.1		
Weight of Asbestos in ACM (Non-g Friable)	dry wt	< 0.00001		
Weight of Asbestos as Fibrous g Asbestos (Friable)*	dry wt	< 0.00001		
Weight of Asbestos as Asbestos g Fines (Friable)*	dry wt	< 0.00001		

Glossary of Terms

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- · Loose fibres (Major) Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
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- ACM Debris (Major) Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- Unknown Mineral Fibres Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
- Trace Trace levels of asbestos, as defined by AS4964-2004.

For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil. https://www.branz.co.nz/asbestos

The following assumptions have been made:

- 1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
- 2. The weight of asbestos in the sample is unaffected by the ashing process.

Results are representative of the sample provided to Hill Laboratories only.





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 Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
New Zealand Guidelines Semi Quantitati	ve Asbestos in Soil		
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	2
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	2
Moisture*	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	2
Sample Fraction >10mm*	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	2
Sample Fraction <10mm to >2mm*	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	2
Sample Fraction <2mm*	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	2
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	2
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	2
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	2
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	2
Weight of Asbestos as Fibrous Asbestos (Friable)*	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	2
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	2
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	2
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	2
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	2

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

Testing was completed on 16-Jul-2024. For completion dates of individual analyses please contact the laboratory.

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Alexa Badenhorst BSc (Hons) Team Leader - Asbestos



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Certificate of Analysis

Page 1 of 2

A2Pv1

Client: Aur

Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 2292 Tauranga 3140 Lab No: Date Received:

17-Jul-2024

Date Reported: Quote No:

19-Jul-2024

Order No:

126272

3629428

Client Reference: Add. Client Ref:

< 0.00001

< 0.00001

521290 - 064 Sampled: 16/07/24

Submitted By: Tiana Hill

Sample Type: Soil				
Sample Name:		BH39_0.5-0.6		
Lab N	lumber:	3629428.1		
Asbestos Presence / Absence		Asbestos NOT detected.		
Description of Asbestos Form		-		
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001		
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001		
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001		
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001		
As Received Weight	g	691.0		
Dry Weight	g	530.2		
Moisture*	%	23		
Sample Fraction >10mm*	g dry wt	133.7		
Sample Fraction <10mm to >2mm*	g dry wt	306.7		
Sample Fraction <2mm*	g dry wt	88.3		
<2mm Subsample Weight*	g dry wt	50.5		
Weight of Asbestos in ACM (Non-	g dry wt	< 0.00001		

Glossary of Terms

Fines (Friable)*

Asbestos (Friable)*

Weight of Asbestos as Fibrous

Weight of Asbestos as Asbestos

Friable)

· Loose fibres (Minor) - One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.

g dry wt

g dry wt

- Loose fibres (Major) Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- ACM Debris (Minor) One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
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For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil. https://www.branz.co.nz/asbestos

The following assumptions have been made:

- 1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
- 2. The weight of asbestos in the sample is unaffected by the ashing process.

Results are representative of the sample provided to Hill Laboratories only.





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Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
New Zealand Guidelines Semi Quantitati	ve Asbestos in Soil		
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1
Moisture*	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1
Sample Fraction >10mm*	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1
Sample Fraction <10mm to >2mm*	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1
Sample Fraction <2mm*	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1
Weight of Asbestos as Fibrous Asbestos (Friable)*	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1

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

Testing was completed on 19-Jul-2024. 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.

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

Danielle Carter BSc, PGDipSci, MSc Laboratory Technician - Asbestos



R J Hill Laboratories Limited Ground Fl. 28 Heather Street Parnell

Auckland 1052 New Zealand

6 0508 HILL LAB (44 555 22) **\(\sqrt{+64} 78582000 \)** mail@hill-labs.co.nz www.hill-labs.co.nz

Certificate of Analysis

Page 1 of 2

A2Pv1

Client:

Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 Lab No: 3651494 **Date Received:**

16-Aug-2024

Date Reported: Quote No:

19-Aug-2024 126272

Order No:

Client Reference:

521290-064

Add. Client Ref:

Sampled: 14-15/08/24

Submitted By: Tiana Hill

Sample Type: Soil					
Sample	Name:	BH44_0.3-0.4	BH44_1.1-1.2	BH44_3.0-3.4	BH51_0.5-0.6
Lab N	umber:	3651494.1	3651494.2	3651494.3	3651494.4
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001	< 0.001
As Received Weight	g	541.7	841.7	746.1	794.3
Dry Weight	g	429.7	557.1	589.5	642.2
Moisture*	%	21	34	21	19
Sample Fraction >10mm*	g dry wt	38.4	234.5	317.5	163.8
Sample Fraction <10mm to >2mm*	g dry wt	311.2	261.9	194.1	367.4
Sample Fraction <2mm*	g dry wt	79.4	58.9	76.0	109.8
<2mm Subsample Weight*	g dry wt	52.4	58.9	50.5	55.8
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001	< 0.00001

Glossary of Terms

- · Loose fibres (Minor) One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- · Loose fibres (Major) Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- ACM Debris (Minor) One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- ACM Debris (Major) Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- Unknown Mineral Fibres Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
- Trace Trace levels of asbestos, as defined by AS4964-2004.

For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil. https://www.branz.co.nz/asbestos

The following assumptions have been made:

- 1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
- 2. The weight of asbestos in the sample is unaffected by the ashing process.

Results are representative of the sample provided to Hill Laboratories only.





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.

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 Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil				
Test	Method Description	Default Detection Limit	Sample No	
New Zealand Guidelines Semi Quantitati	ve Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1-4	
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1-4	
Moisture*	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1-4	
Sample Fraction >10mm*	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-4	
Sample Fraction <10mm to >2mm*	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-4	
Sample Fraction <2mm*	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-4	
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-4	
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-4	
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-4	
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-4	
Weight of Asbestos as Fibrous Asbestos (Friable)*	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-4	
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-4	
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-4	
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-4	
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-4	

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

Testing was completed on 19-Aug-2024. 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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 ⊕ www.hill-labs.co.nz

Certificate of Analysis

Page 1 of 2

A2Pv1

Client: Aurecon New Zealand Limited

Contact: Andrew Allcock

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149

 Lab No:
 3655467

 Date Received:
 22-Aug-2024

 Date Reported:
 23-Aug-2024

Quote No: Order No:

Client Reference:

Add. Client Ref:

521290 - 064 Sampled: 19/08/24

126272

Submitted Bv: Tiana Hill

Sample Type: Soil				
Sample	Name:	BH46_0.4-0.5	BH46_1.4-1.6	BH45_0.8-1.0
Lab N	umber:	3655467.1	3655467.2	3655467.3
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001	< 0.001
As Received Weight	g	713.0	686.9	787.4
Dry Weight	g	563.1	541.3	605.0
Moisture*	%	21	21	23
Sample Fraction >10mm*	g dry wt	270.6	242.2	260.4
Sample Fraction <10mm to >2mm*	g dry wt	233.2	232.0	271.0
Sample Fraction <2mm*	g dry wt	58.9	64.2	72.2
<2mm Subsample Weight*	g dry wt	58.9	51.9	55.8
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001	< 0.00001

Glossary of Terms

- · Loose fibres (Minor) One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- · Loose fibres (Major) Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- ACM Debris (Minor) One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- ACM Debris (Major) Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- Unknown Mineral Fibres Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
- Trace Trace levels of asbestos, as defined by AS4964-2004.

For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil. https://www.branz.co.nz/asbestos

The following assumptions have been made:

- 1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
- 2. The weight of asbestos in the sample is unaffected by the ashing process.





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 Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil				
Test	Method Description	Default Detection Limit	Sample No	
New Zealand Guidelines Semi Quantitati	ve Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1-3	
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1-3	
Moisture*	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1-3	
Sample Fraction >10mm*	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-3	
Sample Fraction <10mm to >2mm*	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-3	
Sample Fraction <2mm*	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-3	
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-3	
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-3	
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3	
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3	
Weight of Asbestos as Fibrous Asbestos (Friable)*	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3	
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3	
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-3	
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3	
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-3	

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

Testing was completed on 23-Aug-2024. 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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Page 1 of 2

A2Pv1

Client: Aure

Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149

 Lab No:
 3658961

 Date Received:
 28-Aug-2024

 Date Reported:
 30-Aug-2024

Quote No: Order No:

126272

Client Reference: Add. Client Ref:

521290-064 Sampled 26/08/24

Submitted Bv: Tiana Hill

		•
Sample Type: Soil		
Sample Name:		BH25_0.2-0.3
Lab Nu		3658961.1
Asbestos Presence / Absence		Asbestos NOT detected.
Description of Asbestos Form		-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001
As Received Weight	g	629.9
Dry Weight	g	456.6
Moisture*	%	28
Sample Fraction >10mm*	g dry wt	70.8
Sample Fraction <10mm to >2mm*	g dry wt	206.5
Sample Fraction <2mm*	g dry wt	178.7
<2mm Subsample Weight*	g dry wt	52.8
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)*	g dry wt	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001

Glossary of Terms

- · Loose fibres (Minor) One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- · Loose fibres (Major) Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- ACM Debris (Minor) One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- ACM Debris (Major) Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- Unknown Mineral Fibres Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
- Trace Trace levels of asbestos, as defined by AS4964-2004.

For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil. https://www.branz.co.nz/asbestos

The following assumptions have been made:

- 1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
- 2. The weight of asbestos in the sample is unaffected by the ashing process.





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 Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil				
Test	Method Description	Default Detection Limit	Sample No	
New Zealand Guidelines Semi Quantitati	ve Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1	
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1	
Moisture*	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1	
Sample Fraction >10mm*	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1	
Sample Fraction <10mm to >2mm*	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1	
Sample Fraction <2mm*	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1	
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1	
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1	
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1	
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1	
Weight of Asbestos as Fibrous Asbestos (Friable)*	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1	
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1	
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1	
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1	
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1	

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

Testing was completed on 30-Aug-2024. 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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Page 1 of 2

A2Pv1

Client:

Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149

 Lab No:
 3663691

 Date Received:
 03-Sep-2024

 Date Reported:
 05-Sep-2024

126272

Quote No: Order No:

521290-064

Client Reference: Add. Client Ref:

Sampled: 29/08/24

Submitted Bv: Tiana Hill

Sample Type: Soil		
Sample Name:		BH06_0.4-0.5
Lab Nu	ımber:	3663691.1
Asbestos Presence / Absence		Asbestos NOT detected.
Description of Asbestos Form		•
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001
As Received Weight	g	721.7
Dry Weight	g	559.6
Moisture*	%	22
Sample Fraction >10mm*	g dry wt	191.2
Sample Fraction <10mm to >2mm*	g dry wt	282.4
Sample Fraction <2mm*	g dry wt	83.9
<2mm Subsample Weight*	g dry wt	50.1
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)*	g dry wt	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001

Glossary of Terms

- · Loose fibres (Minor) One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- · Loose fibres (Major) Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- ACM Debris (Minor) One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- ACM Debris (Major) Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- Unknown Mineral Fibres Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
- Trace Trace levels of asbestos, as defined by AS4964-2004.

For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil. https://www.branz.co.nz/asbestos

The following assumptions have been made:

- 1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
- 2. The weight of asbestos in the sample is unaffected by the ashing process.





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 Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil				
Test	Method Description	Default Detection Limit	Sample No	
New Zealand Guidelines Semi Quantitati	ve Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1	
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1	
Moisture*	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1	
Sample Fraction >10mm*	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1	
Sample Fraction <10mm to >2mm*	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1	
Sample Fraction <2mm*	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1	
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1	
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1	
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1	
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1	
Weight of Asbestos as Fibrous Asbestos (Friable)*	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1	
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1	
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1	
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1	
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1	

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

Testing was completed on 05-Sep-2024. 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.

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

Mahaleel (May) Alfante BSc, PGDipSci Laboratory Technician - Asbestos

May alfante



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 ☑ mail@hill-labs.co.nz
 ⊕ www.hill-labs.co.nz

Certificate of Analysis

Page 1 of 2

A2Pv1

Client: Au

Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 Lab No: Date Received:

12-Sep-2024

Date Reported: Quote No:

16-Sep-2024

Order No:

126272

3670623

Client Reference: Submitted By:

521290-064 Tiana Hill

Sample Type: Soil			
Sample	Name:	BH36_0.6-0.7 12-Sep-2024	BH46_3.5-3.6 23-Aug-2024
Lab N	umber:	3670623.1	3670623.2
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001
As Received Weight	g	827.9	968.0
Dry Weight	g	544.3	742.7
Moisture*	%	34	23
Sample Fraction >10mm*	g dry wt	306.2	464.9
Sample Fraction <10mm to >2mm*	g dry wt	185.7	210.4
Sample Fraction <2mm*	g dry wt	50.6	67.2
<2mm Subsample Weight*	g dry wt	50.6	53.0
Weight of Asbestos in ACM (Non-Friable)	g dry wt	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)*	g dry wt	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos Fines (Friable)*	g dry wt	< 0.00001	< 0.00001

Glossary of Terms

- · Loose fibres (Minor) One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- Loose fibres (Major) Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- ACM Debris (Minor) One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- ACM Debris (Major) Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- Unknown Mineral Fibres Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
- Trace Trace levels of asbestos, as defined by AS4964-2004.

For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil. https://www.branz.co.nz/asbestos

The following assumptions have been made:

- 1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
- 2. The weight of asbestos in the sample is unaffected by the ashing process.





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 Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil				
Test	Method Description	Default Detection Limit	Sample No	
New Zealand Guidelines Semi Quantitati	ve Asbestos in Soil			
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1-2	
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1-2	
Moisture*	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1-2	
Sample Fraction >10mm*	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-2	
Sample Fraction <10mm to >2mm*	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-2	
Sample Fraction <2mm*	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-2	
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-2	
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-2	
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-2	
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2	
Weight of Asbestos as Fibrous Asbestos (Friable)*	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-2	
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2	
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-2	
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2	
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2	

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

Testing was completed on 16-Sep-2024. 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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Certificate of Analysis

Page 1 of 2

A2Pv1

Client:

Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 Lab No: **Date Received: Date Reported:**

18-Sep-2024

19-Sep-2024

3674826

Quote No: Order No:

126272

Client Reference: Submitted By:

521290-64 Tiana Hill

Sample Type: Soil			
Sample I	Name:	BH38_1.1-1.2 18-Sep-2024	BH14_0.6-0.7 16-Sep-2024
Lab Nu	mber:	3674826.1	3674826.2
Asbestos Presence / Absence		Asbestos NOT detected.	Asbestos NOT detected.
Description of Asbestos Form		-	-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001	< 0.001
As Received Weight	g	1,064.8	883.9
Dry Weight	g	830.6	645.7
Moisture*	%	22	27
Sample Fraction >10mm*	g dry wt	53.1	311.5
Sample Fraction <10mm to >2mm*	g dry wt	546.0	241.3
Sample Fraction <2mm*	g dry wt	223.0	86.0
<2mm Subsample Weight*	g dry wt	46.5	55.6
Weight of Asbestos in ACM (Non- Friable)	g dry wt	< 0.00001	< 0.00001
Weight of Asbestos as Fibrous Asbestos (Friable)*	g dry wt	< 0.00001	< 0.00001
Weight of Asbestos as Asbestos (Friable)*	g dry wt	< 0.00001	< 0.00001

Glossary of Terms

- · Loose fibres (Minor) One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- Loose fibres (Major) Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- ACM Debris (Minor) One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- ACM Debris (Major) Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- Unknown Mineral Fibres Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
- Trace Trace levels of asbestos, as defined by AS4964-2004.

For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil. https://www.branz.co.nz/asbestos

The following assumptions have been made:

- 1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
- 2. The weight of asbestos in the sample is unaffected by the ashing process.





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 Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
New Zealand Guidelines Semi Quantitati	ve Asbestos in Soil		
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1-2
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1-2
Moisture*	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1-2
Sample Fraction >10mm*	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-2
Sample Fraction <10mm to >2mm*	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-2
Sample Fraction <2mm*	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1-2
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1-2
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1-2
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	1-2	
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2
Weight of Asbestos as Fibrous Asbestos (Friable)*	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-2
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1-2
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1-2

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

Testing was completed on 19-Sep-2024. 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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Certificate of Analysis

Page 1 of 2

A2Pv1

Client: Aurec

Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149

 Lab No:
 3682863

 Date Received:
 30-Sep-2024

 Date Reported:
 03-Oct-2024

Quote No: Order No:

126272

Client Reference:

521290-064

Submitted By:

Add. Client Ref:

Sampled 24/09/24 Tiana Hill

Sample Type: Soil		
Sample Name:		BH43_0.5-0.6
Lab Nui	mber:	3682863.1
Asbestos Presence / Absence		Asbestos NOT detected.
Description of Asbestos Form		-
Asbestos in ACM as % of Total Sample*	% w/w	< 0.001
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	% w/w	< 0.001
Asbestos as Fibrous Asbestos as % of Total Sample*	% w/w	< 0.001
Asbestos as Asbestos Fines as % of Total Sample*	% w/w	< 0.001
As Received Weight	g	738.9
Dry Weight	g	550.9
Moisture*	%	25
Sample Fraction >10mm* g	dry wt	198.1
Sample Fraction <10mm to >2mm* g	dry wt	271.6
Sample Fraction <2mm* g	dry wt	79.6
<2mm Subsample Weight* g	dry wt	51.5
Weight of Asbestos in ACM (Non-griable)	dry wt	< 0.00001
Weight of Asbestos as Fibrous g Asbestos (Friable)*	dry wt	< 0.00001
Weight of Asbestos as Asbestos g Fines (Friable)*	dry wt	< 0.00001

Glossary of Terms

- · Loose fibres (Minor) One or two fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- · Loose fibres (Major) Three or more fibres/fibre bundles identified during analysis by stereo microscope/PLM.
- ACM Debris (Minor) One or two small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- ACM Debris (Major) Large (>2mm) piece, or more than three small (<2mm) pieces of material attached to fibres identified during analysis by stereo microscope/PLM.
- Unknown Mineral Fibres Mineral fibres of unknown type detected by polarised light microscopy including dispersion staining. The fibres detected may or may not be asbestos fibres. To confirm the identities, another independent analytical technique may be required.
- Trace Trace levels of asbestos, as defined by AS4964-2004.

For further details, please contact the Asbestos Team.

Please refer to the BRANZ New Zealand Guidelines for Assessing and Managing Asbestos in Soil. https://www.branz.co.nz/asbestos

The following assumptions have been made:

- 1. Asbestos Fines in the <2mm fraction, after homogenisation, is evenly distributed throughout the fraction
- 2. The weight of asbestos in the sample is unaffected by the ashing process.

Results are representative of the sample provided to Hill Laboratories only.





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.

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 Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil		<u> </u>	
Test	Method Description	Default Detection Limit	Sample No
New Zealand Guidelines Semi Quantitati	ve Asbestos in Soil		
As Received Weight	Measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1
Dry Weight	Sample dried at 100 to 105°C, measurement on balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g	1
Moisture*	Sample dried at 100 to 105°C. Calculation = (As received weight - Dry weight) / as received weight x 100.	1 %	1
Sample Fraction >10mm*	Sample dried at 100 to 105°C, 10mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1
Sample Fraction <10mm to >2mm*	Sample dried at 100 to 105°C, 10mm and 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1
Sample Fraction <2mm*	Sample dried at 100 to 105°C, 2mm sieve, measurement on analytical balance. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland.	0.1 g dry wt	1
Asbestos Presence / Absence	Examination using Low Powered Stereomicroscopy followed by 'Polarised Light Microscopy' including 'Dispersion Staining Techniques'. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. AS 4964 (2004) - Method for the Qualitative Identification of Asbestos in Bulk Samples.	0.01%	1
Description of Asbestos Form	Description of asbestos form and/or shape if present.	-	1
Weight of Asbestos in ACM (Non-Friable)	Measurement on analytical balance, from the >10mm Fraction. Weight of asbestos based on assessment of ACM form. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1
Asbestos in ACM as % of Total Sample*	Calculated from weight of asbestos in ACM and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1
Weight of Asbestos as Fibrous Asbestos (Friable)*	Measurement on analytical balance, from the >10mm Fraction. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1
Asbestos as Fibrous Asbestos as % of Total Sample*	Calculated from weight of fibrous asbestos and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1
Weight of Asbestos as Asbestos Fines (Friable)*	Measurement on analytical balance, from the <10mm Fractions. Analysed at Hill Laboratories - Asbestos; 28 Heather Street, Auckland. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.00001 g dry wt	1
Asbestos as Asbestos Fines as % of Total Sample*	Calculated from weight of asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1
Combined Fibrous Asbestos + Asbestos Fines as % of Total Sample*	Calculated from weight of fibrous asbestos plus asbestos fines and sample dry weight. New Zealand Guidelines for Assessing and Managing Asbestos in Soil, November 2017.	0.001 % w/w	1

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

Testing was completed between 02-Oct-2024 and 03-Oct-2024. 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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Alexa Badenhorst BSc (Hons) Team Leader - Asbestos



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Quality Assurance Report

Page 1 of 6

QCPv1

Client: Contact: Aurecon New Zealand Limited

Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 Lab No: **Date Received: Date Reported:**

01-Oct-2024 08-Oct-2024

Quote No:

Order No:

126272

3684098

Client Reference: 521290-064 Submitted By: Tiana Hill

Blank QCs					
Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11080.16					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No	
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No	
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No	

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11080.30				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11082.16				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11082.29				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11082.29				
Results Control Limits Outside Limit (Yes/No)				Outside Limit (Yes/No)
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

50x Manual Dilution Digest Blank PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11082.61				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	$< 0.4 \pm 0.26$	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11083.16				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	$< 0.4 \pm 0.26$	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11097.16				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11097.35				
Results Control Limits Outside Limit (Yes/No)				Outside Limit (Yes/No)
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11100.16				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11100.40				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11104.37				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 — 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

50x Manual Dilution Digest Blank PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11104.88				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No

50x Manual Dilution Digest Blank PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11104.88				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Zinc	mg/kg dry wt	$< 4 \pm 2.7$	-4.0 – 4.0	No
Reference Material	QCs			
SETOC-705 QC - WS: High	Volume Enviro	nmental Soils by ICP-MS (F	IVesTR): 11080.17	
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.9 ± 2.1	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.86 ± 0.14	0.72 – 0.99	No
Total Recoverable Chromium	mg/kg dry wt	26.8 ± 4.4	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.2 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.6 ± 5.1	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	14.5 ± 2.3	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	198 ± 15	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11080.47				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	12.7 ± 2.3	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.92 ± 0.15	0.72 - 0.99	No
Total Recoverable Chromium	mg/kg dry wt	30.9 ± 5.0	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	14.7 ± 2.4	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	36.6 ± 5.5	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	15.7 ± 2.4	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	217 ± 16	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11082.17				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.2 ± 2.0	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.83 ± 0.14	0.72 – 0.99	No
Total Recoverable Chromium	mg/kg dry wt	26.0 ± 4.3	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.1 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	32.2 ± 4.9	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	14.3 ± 2.3	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	194 ± 14	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11082.37				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.3 ± 2.1	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.80 ± 0.13	0.72 – 0.99	No
Total Recoverable Chromium	mg/kg dry wt	25.9 ± 4.3	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	12.4 ± 2.2	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	31.4 ± 4.8	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	13.3 ± 2.2	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	196 ± 15	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11082.62				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	9.8 ± 2.0	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.77 ± 0.13	0.72 - 0.99	No
Total Recoverable Chromium	mg/kg dry wt	24.2 ± 4.0	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	12.1 ± 2.2	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	29.7 ± 4.5	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	13.1 ± 2.2	11.6 – 17.1	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11082.62				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Zinc	mg/kg dry wt	180 ± 13	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11083.17				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.5 ± 2.2	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.83 ± 0.14	0.72 – 0.99	No
Total Recoverable Chromium	mg/kg dry wt	25.5 ± 4.2	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.1 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	34.8 ± 5.3	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	13.7 ± 2.2	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	197 ± 15	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11083.49				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.5 ± 2.2	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.85 ± 0.14	0.72 - 0.99	No
Total Recoverable Chromium	mg/kg dry wt	27.1 ± 4.4	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.8 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.7 ± 5.1	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	13.6 ± 2.2	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	199 ± 15	171 – 230	No

		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.0 ± 2.1	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.79 ± 0.13	0.72 - 0.99	No
Total Recoverable Chromium	mg/kg dry wt	24.8 ± 4.1	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.4 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.7 ± 5.1	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	13.5 ± 2.2	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	197 ± 15	171 – 230	No

SETOC-705 QC - WS: High	Volume Enviro	onmental Soils by ICP-MS (F	HVesTR): 11097.55	
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.8 ± 2.1	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.79 ± 0.13	0.72 – 0.99	No
Total Recoverable Chromium	mg/kg dry wt	25.1 ± 4.1	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.1 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	31.7 ± 4.8	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	14.0 ± 2.3	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	191 ± 14	171 – 230	No

SETOC-705 QC - WS: High	Volume Enviro	nmental Soils by ICP-MS (F	HVesTR): 11100.17	
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.7 ± 2.1	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.82 ± 0.14	0.72 - 0.99	No
Total Recoverable Chromium	mg/kg dry wt	26.1 ± 4.3	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.2 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	32.8 ± 5.0	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	14.2 ± 2.3	11.6 – 17.1	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11100.17				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Zinc	mg/kg dry wt	190 ± 14	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11100.57				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.5 ± 2.1	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.87 ± 0.14	0.72 – 0.99	No
Total Recoverable Chromium	mg/kg dry wt	26.6 ± 4.4	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.3 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.6 ± 5.1	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	14.3 ± 2.3	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	192 ± 14	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11104.17				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.2 ± 2.2	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.88 ± 0.14	0.72 - 0.99	No
Total Recoverable Chromium	mg/kg dry wt	26.8 ± 4.4	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.6 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.8 ± 5.1	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	14.6 ± 2.3	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	200 ± 15	171 – 230	No

		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.7 ± 2.1	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.86 ± 0.14	0.72 - 0.99	No
Total Recoverable Chromium	mg/kg dry wt	27.2 ± 4.5	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.3 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.1 ± 5.0	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	14.4 ± 2.3	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	197 ± 15	171 – 230	No

SETOC-705 QC - WS: High	Volume Enviro	onmental Soils by ICP-MS (F	HVesTR): 11104.89	
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	12.4 ± 2.3	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.95 ± 0.15	0.72 – 0.99	No
Total Recoverable Chromium	mg/kg dry wt	29.9 ± 4.9	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	15.0 ± 2.5	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	37.4 ± 5.6	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	16.9 ± 2.6	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	222 ± 16	171 – 230	No

Lab No: 3684098-QCPv1 Hill Labs Page 6 of 6



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Certificate of Analysis

Page 1 of 2

SPv1

Client: Contact:

Aurecon New Zealand Limited

ontact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 Lab No: Date Received: Date Reported: 3684098 01-Oct-2024

08-Oct-2024

Quote No: Order No:

126272

Client Reference: 521
Submitted By: Tial

521290-064 Tiana Hill

Sample Type: Soil						
	Sample Name:	QAQC_01 29-Aug-2024	QAQC_0 05-Jul-20	_	QAQC_04 26-Aug-2024	QAQC_05
	Lab Number:	3684098.1	3684098.	2 3684098.3	3684098.4	3684098.5
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	5	2	3	< 2	< 2
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	28	15	22	7	14
Total Recoverable Copper	mg/kg dry wt	30	10	9	3	4
Total Recoverable Lead	mg/kg dry wt	12.6	20	6.4	12.8	7.4
Total Recoverable Nickel	mg/kg dry wt	8	11	4	2	3
Total Recoverable Zinc	mg/kg dry wt	35	41	16	12	9
	Sample Name:	QAQC_	06	QAQC_07	C)AQC_08

	Sample Name:	QAQC_06	QAQC_07	QAQC_08
	Lab Number:	3684098.6	3684098.7	3684098.8
Heavy Metals, Screen Level				
Total Recoverable Arsenic	mg/kg dry wt	9	4	< 2
Total Recoverable Cadmium	mg/kg dry wt	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	9	21	27
Total Recoverable Copper	mg/kg dry wt	3	20	21
Total Recoverable Lead	mg/kg dry wt	14.5	9.2	13.6
Total Recoverable Nickel	mg/kg dry wt	5	< 2	13
Total Recoverable Zinc	mg/kg dry wt	6	9	55

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 Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil						
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%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	1-8			
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	1-8			





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

Testing was completed between 02-Oct-2024 and 08-Oct-2024. 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.

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

General

Kim Harrison MSc

Client Services Manager - Environmental



Attachment I – QA/QC records



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Quality Assurance Report

Page 1 of 5

QCPv1

Client: Contact: Aurecon New Zealand Limited

Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 2292 Tauranga 3140 Lab No: **Date Received: Date Reported:**

16-May-2024 20-May-2024

Quote No: Order No:

126272

3582989

Client Reference: 521290-064 Tiana Hill Submitted By:

Sample Specific QCs						
Organochlorine Pesticides Screening in Soil						
	3582989.1	Control Limits	Outside Limit (Yes/No)			
2 4 5 6-tetrachloro-m-xylene %	109	40 – 120	No			

Polycyclic Aromatic Hydrocarbons Screening in Soil					
3582989.1 Control Limits Outside Limit (Yes					
1-methylnaphthalene-d10	%	112	65 – 130	No	
Benzo[a]pyrene-d12	%	116	70 – 140	No	
Fluoranthene-d10	%	104	66 – 130	No	

Polycyclic Aromatic Hydrocarbons Screening in Soil				
		3582989.2	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	111	65 – 130	No
Benzo[a]pyrene-d12	%	116	70 – 140	No
Fluoranthene-d10	%	104	66 – 130	No

Blank QCs				
Blank 1 PrepWS xsSHOC - V	VS: Polycyclic	Aromatic Hydrocarbons Sc	oil Analysis: 15857.1	
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	mg/kg dry wt	0.011 ± 0.032	0.0 – 0.0100	Yes #1
2-Methylnaphthalene	mg/kg dry wt	$< 0.02 \pm 0.032$	0.0 - 0.0100	Yes #2
Acenaphthylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Acenaphthene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 - 0.0100	No
Anthracene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 - 0.0100	No
Benzo[a]anthracene	mg/kg dry wt	< 0.010 ± 0.0062	0.0 - 0.0100	No
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 – 0.0100	No
Benzo[e]pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Benzo[g,h,i]perylene	mg/kg dry wt	$< 0.010 \pm 0.0064$	0.0 - 0.0100	No
Benzo[k]fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Chrysene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Fluorene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Naphthalene	mg/kg dry wt	< 0.05 ± 0.031	0.0 - 0.050	No
Perylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Phenanthrene	mg/kg dry wt	< 0.010 ± 0.0067	0.0 - 0.0100	No

3582989-QCPv1 Lab No: Hill Labs Page 1 of 5

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 15857.1					
Results Control Limits Outside Limit (Yes/No)					
Pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10404.16				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 Prepws est	ng - ws. mign	volume Environmental Soli	ls by ICP-MS (HVesTR): 104	04.20
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	$< 0.10 \pm 0.066$	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	$< 0.4 \pm 0.26$	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Blank 1 PrepWS xsSHOC - WS: Organochlorine Pesticides Soil Analysis: 8101.1					
		Results	Control Limits	Outside Limit (Yes/No)	
Aldrin	mg/kg dry wt	$< 0.010 \pm 0.0030$	0.0 – 0.0100	No	
alpha-BHC	mg/kg dry wt	< 0.010 ± 0.0030	0.0 - 0.0100	No	
beta-BHC	mg/kg dry wt	< 0.010 ± 0.0028	0.0 - 0.0100	No	
delta-BHC	mg/kg dry wt	< 0.010 ± 0.0029	0.0 - 0.0100	No	
gamma-BHC (Lindane)	mg/kg dry wt	< 0.010 ± 0.0031	0.0 – 0.0100	No	
cis-Chlordane	mg/kg dry wt	< 0.010 ± 0.0030	0.0 - 0.0100	No	
trans-Chlordane	mg/kg dry wt	< 0.010 ± 0.0030	0.0 - 0.0100	No	
2,4'-DDD	mg/kg dry wt	< 0.010 ± 0.0029	0.0 - 0.0100	No	
4,4'-DDD	mg/kg dry wt	< 0.010 ± 0.0024	0.0 - 0.0100	No	
2,4'-DDE	mg/kg dry wt	< 0.010 ± 0.0030	0.0 - 0.0100	No	
4,4'-DDE	mg/kg dry wt	< 0.010 ± 0.0023	0.0 - 0.0100	No	
2,4'-DDT	mg/kg dry wt	< 0.010 ± 0.0021	0.0 – 0.0100	No	
4,4'-DDT	mg/kg dry wt	< 0.010 ± 0.0017	0.0 - 0.0100	No	
Dieldrin	mg/kg dry wt	< 0.010 ± 0.0026	0.0 - 0.0100	No	
Endosulfan I	mg/kg dry wt	< 0.010 ± 0.0029	0.0 - 0.0100	No	
Endosulfan II	mg/kg dry wt	< 0.010 ± 0.0026	0.0 – 0.0100	No	
Endosulfan sulphate	mg/kg dry wt	< 0.010 ± 0.0013	0.0 - 0.0100	No	
Endrin	mg/kg dry wt	< 0.010 ± 0.00048	0.0 - 0.0100	No	
Endrin aldehyde	mg/kg dry wt	< 0.010 ± 0.0019	0.0 - 0.0100	No	
Endrin ketone	mg/kg dry wt	< 0.010 ± 0.0024	0.0 - 0.0100	No	
Heptachlor	mg/kg dry wt	< 0.010 ± 0.0029	0.0 - 0.0100	No	
Heptachlor epoxide	mg/kg dry wt	< 0.010 ± 0.0031	0.0 - 0.0100	No	
Hexachlorobenzene	mg/kg dry wt	< 0.010 ± 0.0029	0.0 - 0.0100	No	
Methoxychlor	mg/kg dry wt	< 0.010 ± 0.00048	0.0 - 0.0100	No	

QC Spike QCs				
LCS OC/PAH xsSHOC - WS: Polycycli	c Ar	omatic Hydrocarbons Soil A	nalysis: 15857.2	
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	121 ± 30	78 – 122	No
2-Methylnaphthalene	%	117 ± 29	72 – 117	No
Acenaphthylene	%	111 ± 10	75 – 118	No
Acenaphthene	%	115 ± 33	84 – 119	No
Anthracene	%	114 ± 35	79 – 121	No
Benzo[a]anthracene	%	114 ± 30	81 – 123	No
Benzo[a]pyrene (BAP)	%	113.0 ± 8.6	76 – 123	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	113 ± 24	80 – 121	No
Benzo[e]pyrene	%	97.0 ± 7.4	78 – 110	No
Benzo[g,h,i]perylene	%	112 ± 20	80 – 124	No
Benzo[k]fluoranthene	%	111 ± 14	79 – 121	No
Chrysene	%	108 ± 16	83 – 121	No
Dibenzo[a,h]anthracene	%	110 ± 15	78 – 124	No
Fluoranthene	%	101 ± 11	81 – 122	No
Fluorene	%	111 ± 14	86 – 122	No
Indeno(1,2,3-c,d)pyrene	%	109 ± 11	83 – 123	No
Naphthalene	%	120 ± 30	84 – 118	Yes #3
Perylene	%	98.0 ± 7.5	76 – 107	No
Phenanthrene	%	110 ± 16	84 – 120	No
Pyrene	%	113 ± 15	79 – 123	No

LCS OC/PAH PrepWS xsSHOC	- WS: Orgar	nochlorine Pesticides Soil	Analysis: 8101.2	
		Results	Control Limits	Outside Limit (Yes/No)
Aldrin	%	104 ± 32	80 – 121	No
alpha-BHC	%	101 ± 31	76 – 121	No
beta-BHC	%	98 ± 38	75 – 113	No
delta-BHC	%	100 ± 35	74 – 114	No
gamma-BHC (Lindane)	%	100 ± 29	78 – 116	No
cis-Chlordane	%	103 ± 33	78 – 118	No
trans-Chlordane	%	106 ± 32	76 – 121	No
2,4'-DDD	%	96 ± 35	75 – 114	No
4,4'-DDD	%	94 ± 46	75 – 120	No
2,4'-DDE	%	108 ± 35	73 – 118	No
4,4'-DDE	%	101 ± 51	73 – 116	No
2,4'-DDT	%	134 ± 70	70 – 124	Yes #4
4,4'-DDT	%	136 ± 79	65 – 120	Yes #4
Dieldrin	%	109 ± 48	84 – 124	No
Endosulfan I	%	106 ± 39	81 – 120	No
Endosulfan II	%	96 ± 43	72 – 117	No
Endosulfan sulphate	%	102 ± 64	76 – 120	No
Endrin	%	106 ± 70	78 – 124	No
Endrin aldehyde	%	116 ± 65	84 – 127	No
Endrin ketone	%	96 ± 47	69 – 115	No
Heptachlor	%	102 ± 35	74 – 120	No
Heptachlor epoxide	%	100 ± 29	79 – 119	No

LCS OC/PAH PrepWS xsSHOC - WS: Organochlorine Pesticides Soil Analysis: 8101.2					
Results Control Limits Outside Limit (Yes/No)					
Hexachlorobenzene	%	98 ± 34	77 – 116	No	
Methoxychlor	%	127 ± 84	70 – 125	Yes #4	

Sample Spike QCs			
Spike OC/PAH PrepWS xsSHOC - WS: O	rganochlorine Pesticides Soi	Analysis: 8101.16	
	Results	Control Limits	Outside Limit (Yes/No)
Aldrin %	107 ± 33	83 – 122	No
alpha-BHC %	106 ± 32	80 – 122	No
beta-BHC %	102 ± 39	79 – 114	No
delta-BHC %	101 ± 35	76 – 118	No
gamma-BHC (Lindane) %	103 ± 29	80 – 117	No
cis-Chlordane %	105 ± 34	80 – 120	No
trans-Chlordane %	109 ± 33	79 – 121	No
2,4'-DDD %	106 ± 39	74 – 120	No
4,4'-DDD %	105 ± 51	75 – 125	No
2,4'-DDE %	109 ± 35	74 – 119	No
4,4'-DDE %	104 ± 53	76 – 120	No
2,4'-DDT %	112 ± 59	72 – 126	No
4,4'-DDT %	101 ± 59	63 – 123	No
Dieldrin %	113 ± 50	86 – 126	No
Endosulfan I %	107 ± 39	83 – 120	No
Endosulfan II %	99 ± 44	72 – 119	No
Endosulfan sulphate %	108 ± 67	78 – 124	No
Endrin %	110 ± 73	82 – 126	No
Endrin aldehyde %	118 ± 67	84 – 131	No
Endrin ketone %	98 ± 48	70 – 119	No
Heptachlor %	94 ± 32	79 – 123	No
Heptachlor epoxide %	105 ± 30	81 – 119	No
Hexachlorobenzene %	103 ± 36	77 – 119	No
Methoxychlor %	108 ± 72	71 – 133	No

Reference Material QCs				
QC A7 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10404.17				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.1 ± 2.2	9.4 – 13.9	No
Total Recoverable Lead	mg/kg dry wt	14.9 ± 2.3	10.0 – 14.8	Yes #5

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10404.19				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	8.7 ± 1.9	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.371 ± 0.083	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	23.8 ± 4.0	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	18.7 ± 2.9	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	41.4 ± 6.2	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	6.8 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	88.3 ± 6.8	79 – 105	No

QC A7 dup 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10404.34				
Results Control Limits Outside Limit (Yes/No)				
Total Recoverable Arsenic	mg/kg dry wt	11.1 ± 2.2	9.4 – 13.9	No
Total Recoverable Lead	mg/kg dry wt	13.0 ± 2.0	10.0 – 14.8	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10404.43				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	8.5 ± 1.9	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.363 ± 0.083	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	21.0 ± 3.5	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	18.2 ± 2.9	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	40.1 ± 6.1	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	5.8 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	84.7 ± 6.6	79 – 105	No

AGAL-12 QC PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10404.54				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	3.4 ± 1.4	3.1 – 4.2	No
Total Recoverable Cadmium	mg/kg dry wt	0.70 ± 0.12	0.66 - 0.88	No
Total Recoverable Chromium	mg/kg dry wt	31.5 ± 5.1	27 – 35	No
Total Recoverable Copper	mg/kg dry wt	146 ± 20	140 – 168	No
Total Recoverable Lead	mg/kg dry wt	30.5 ± 4.6	29 – 36	No
Total Recoverable Nickel	mg/kg dry wt	15.2 ± 2.4	13.3 – 17.3	No
Total Recoverable Zinc	mg/kg dry wt	176 ± 13	165 – 200	No

Analyst's Comments

^{#1} The corresponding data was accepted as the blank level is at the Method Detection Limit (MDL).

^{#2} The detection limit for 2-Methylnaphthalene was raised due to an elevated blank level found during the analysis.

^{#3} It was noted that the Laboratory Control Spike (LCS) recovery was elevated and above the acceptable recovery range. The corresponding sample results were accepted because the sample spike recovery was within the expected range.

^{#4} The Laboratory Control Sample (LCS) spike recovery was elevated and above the acceptable recovery range. The corresponding sample results were accepted as there were no positives detected in the sample.

^{#5} The recovery for this analyte was outside the acceptable recovery range of the method. The corresponding sample result was accepted because the related recovery in the other QC material analysed was within the expected range.



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Quality Assurance Report

Page 1 of 2

QCPv1

Client: Contact: Aurecon New Zealand Limited

tact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 2292 Tauranga 3140 Lab No: Date Received: Date Reported: 3590857 24-May-2024

orted: 28-May-2024

Quote No: Order No:

126272

Client Reference: 521290-064
Submitted By: 521290-064
Andrew Allcock

Blank QCs					
Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10445.16					
Results Control Limits Outside Limit (Yes/No)					
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No	
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No	
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No	

Digest Blank 2 PrepWS esD	ng vvo. riigir vo	Control Limits	Outside Limit (Yes/No)	
		Results	Control Limits	Outside Lillit (Tes/No)
Total Recoverable Arsenic	mg/kg dry wt	$< 2 \pm 1.3$	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Reference Material QCs					
QC A7 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10445.17					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	12.0 ± 2.3	9.4 – 13.9	No	
Total Recoverable Lead	mg/kg dry wt	13.4 ± 2.1	10.0 – 14.8	No	

		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	9.7 ± 2.0	8.0 – 11.0	No No
Total Recoverable Cadmium	mg/kg dry wt	0.402 ± 0.086	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	26.2 ± 4.3	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	18.6 ± 2.9	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	42.1 ± 6.3	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	6.4 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	90.1 ± 6.9	79 – 105	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10445.30				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	9.1 ± 1.9	8.0 – 11.0	No

Lab No: 3590857-QCPv1 Hill Labs Page 1 of 2

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10445.30				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Cadmium	mg/kg dry wt	0.383 ± 0.084	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	24.9 ± 4.1	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	18.8 ± 2.9	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	40.0 ± 6.0	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	6.0 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	89.5 ± 6.9	79 – 105	No

QC A7 dup 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10445.52				
Results Control Limits Outside Limit (Yes/No)				
Total Recoverable Arsenic	mg/kg dry wt	12.5 ± 2.3	9.4 – 13.9	No
Total Recoverable Lead	mg/kg dry wt	12.6 ± 1.9	10.0 – 14.8	No

AGAL-12 QC PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10445.62				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	3.8 ± 1.5	3.1 – 4.2	No
Total Recoverable Cadmium	mg/kg dry wt	0.77 ± 0.13	0.66 - 0.88	No
Total Recoverable Chromium	mg/kg dry wt	34.2 ± 5.5	27 – 35	No
Total Recoverable Copper	mg/kg dry wt	156 ± 22	140 – 168	No
Total Recoverable Lead	mg/kg dry wt	33.4 ± 5.1	29 – 36	No
Total Recoverable Nickel	mg/kg dry wt	16.8 ± 2.6	13.3 – 17.3	No
Total Recoverable Zinc	mg/kg dry wt	189 ± 14	165 – 200	No

Lab No: 3590857-QCPv1 Hill Labs Page 2 of 2



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Quality Assurance Report

Page 1 of 2

QCPv1

Client:

Aurecon New Zealand Limited

Contact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 2292 Tauranga 3140 Lab No: 3610977 **Date Received: Date Reported:**

20-Jun-2024 27-Jun-2024

Quote No:

126272

Order No: Client Reference: 521290-064 Submitted By:

Tiana Hill

Blank QCs					
FBlank PrepWS DissPrep 1 - WS: Environmental Waters by ICP-MS (EW): 21004.22					
	Results	Control Limits	Outside Limit (Yes/No)		
Dissolved Arsenic g/m ³	< 0.0010 ± 0.00067	-0.00100 – 0.00100	No		
Dissolved Cadmium g/m ³	< 0.00005 ± 0.000033	-0.000050 - 0.000050	No		
Dissolved Chromium g/m ³	< 0.0005 ± 0.00034	-0.00050 - 0.00050	No		
Dissolved Copper g/m ³	< 0.0005 ± 0.00034	-0.00050 - 0.00050	No		
Dissolved Lead g/m ³	< 0.00010 ± 0.000067	-0.000100 – 0.000100	No		
Dissolved Nickel g/m ³	< 0.0005 ± 0.00034	-0.00050 - 0.00050	No		
Dissolved Zinc g/m ³	< 0.0010 ± 0.00067	-0.00100 - 0.00100	No		

FBlank PrepWS DissPrep 2 - WS: Environmental Waters by ICP-MS (EW): 21004.23				
	Results	Control Limits	Outside Limit (Yes/No)	
Dissolved Arsenic g/m	< 0.0010 ± 0.00067	-0.00100 – 0.00100	No	
Dissolved Cadmium g/m	< 0.00005 ± 0.000033	-0.000050 - 0.000050	No	
Dissolved Chromium g/m	< 0.0005 ± 0.00034	-0.00050 - 0.00050	No	
Dissolved Copper g/m	< 0.0005 ± 0.00034	-0.00050 - 0.00050	No	
Dissolved Lead g/m	< 0.00010 ± 0.000067	-0.000100 - 0.000100	No	
Dissolved Nickel g/m	< 0.0005 ± 0.00034	-0.00050 - 0.00050	No	
Dissolved Zinc g/m	< 0.0010 ± 0.00067	-0.00100 – 0.00100	No	

20x Dilution FBlank PrepWS DissPrep - WS: Environmental Waters by ICP-MS (EW): 21004.24				
		Results	Control Limits	Outside Limit (Yes/No)
Dissolved Arsenic	g/m³	< 0.02 ± 0.00067	-0.020 - 0.020	No
Dissolved Cadmium	g/m³	< 0.0010 ± 0.000034	-0.00100 – 0.00100	No
Dissolved Chromium	g/m³	< 0.010 ± 0.00035	-0.0100 – 0.0100	No
Dissolved Copper	g/m³	< 0.010 ± 0.00034	-0.0100 – 0.0100	No
Dissolved Lead	g/m³	< 0.002 ± 0.000067	-0.0020 - 0.0020	No
Dissolved Nickel	g/m³	< 0.010 ± 0.00034	-0.0100 – 0.0100	No
Dissolved Zinc	g/m³	< 0.02 ± 0.00067	-0.020 - 0.020	No

Blank 1 - WS: Hg by Cold Vapour / Atomic Fluorescence (HgBrF): 3372.9				
		Results	Control Limits	Outside Limit (Yes/No)
Dissolved Mercury	g/m³	< 0.00008 ± 0.00053	-0.000075 – 0.000075	No

Blank 2 - WS: Hg by Cold Vapour / Atomic Fluorescence (HgBrF): 3372.10				
Results Control Limits Outside Limit (Yes/No)				
Dissolved Mercury g/m	< 0.00008 ± 0.00053	-0.000075 – 0.000075	No	

FBlank PrepWS DissPrepMisc 1 - WS: Hg by Cold Vapour / Atomic Fluorescence (HgBrF): 3372.41				
Results Control Limits Outside Limit (Yes/No)				
Dissolved Mercury	g/m³	< 0.00008 ± 0.00053	-0.000075 – 0.000075	No

FBlank PrepWS DissPrepMisc 2 - WS: Hg by Cold Vapour / Atomic Fluorescence (HgBrF): 3372.42				
Results Control Limits Outside Limit (Yes/No)				
Dissolved Mercury g/m	< 0.00008 ± 0.00053	-0.000075 – 0.000075	No	

QC Spike QCs					
Blank Spike - WS: Hg by Cold	Blank Spike - WS: Hg by Cold Vapour / Atomic Fluorescence (HgBrF): 3372.61				
Results Control Limits Outside Limit (Yes/No)					
Dissolved Mercury	%	102 ± 13	85 – 115	No	

Sample Spike QCs				
Spike - WS: Hg by Cold Vapou	r / Atomic Fluc	orescence (HgBrF): 3372.3	35	
		Results	Control Limits	Outside Limit (Yes/No)
Dissolved Mercury	%	105 ± 13	80 – 120	No

Lab No: 3610977-QCPv1 Hill Labs Page 2 of 2



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Quality Assurance Report

Page 1 of 9

QCPv2

(Amended)

Client: Contact: Aurecon New Zealand Limited

Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 Lab No: 3620390 **Date Received:**

04-Jul-2024 **Date Reported:** 14-Aug-2024

Quote No: 126272 **Order No:**

Client Reference: 521290-064

Andrew Allcock

Submitted By: Sample Specific OCs

BTEX in Soil by Headspace GC-MS				
	3620390.4	Control Limits	Outside Limit (Yes/No)	
Benzene-d6 %	102	72 – 140	No	

Polycyclic Aromatic Hydrocarbons Screening in Soil				
		3620390.4	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	100	65 – 130	No
Benzo[a]pyrene-d12	%	104	70 – 140	No
Fluoranthene-d10	%	95	66 – 130	No

BTEX in Soil by Headspace GC-MS				
	3620390.5	Control Limits	Outside Limit (Yes/No)	
Benzene-d6 %	115	72 – 140	No	

Polycyclic Aromatic Hydrocarbons Screening in Soil				
		3620390.5	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	96	65 – 130	No
Benzo[a]pyrene-d12	%	94	70 – 140	No
Fluoranthene-d10	%	97	66 – 130	No

Blank QCs				
Blank 1 PrepWS xsSHOC - V	VS: Polycyclic	Aromatic Hydrocarbons So	il Analysis: 16045.1	
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	mg/kg dry wt	$< 0.010 \pm 0.032$	0.0 - 0.0100	No
2-Methylnaphthalene	mg/kg dry wt	< 0.010 ± 0.032	0.0 - 0.0100	No
Acenaphthylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Acenaphthene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 - 0.0100	No
Anthracene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 - 0.0100	No
Benzo[a]anthracene	mg/kg dry wt	< 0.010 ± 0.0062	0.0 - 0.0100	No
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 – 0.0100	No
Benzo[e]pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 - 0.0100	No
Benzo[k]fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Chrysene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Fluorene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No

3620390-QCPv2 Hill Labs Lab No: Page 1 of 9

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16045.1					
Results Control Limits Outside Limit (Yes/No					
Naphthalene	mg/kg dry wt	$< 0.05 \pm 0.031$	0.0 - 0.050	No	
Perylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Phenanthrene	mg/kg dry wt	$< 0.010 \pm 0.0067$	0.0 - 0.0100	No	
Pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	

blank PrepWS xsMeBTEX PrepWS apHSV - BTEX by Headspace Soil Analysis: 6463.2					
		Results	Control Limits	Outside Limit (Yes/No)	
Benzene	mg/kg dry wt	$< 0.05 \pm 0.024$	0.0 - 0.033	No	
Toluene	mg/kg dry wt	$< 0.05 \pm 0.023$	0.0 - 0.033	No	
Ethylbenzene	mg/kg dry wt	$< 0.05 \pm 0.014$	0.0 - 0.033	No	
m&p-Xylene	mg/kg dry wt	$< 0.10 \pm 0.037$	0.0 - 0.067	No	
o-Xylene	mg/kg dry wt	$< 0.05 \pm 0.026$	0.0 - 0.033	No	

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10665.16				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10665.36					
Results Control Limits Outside Limit (Yes/N					
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No	
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10667.16				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10667.30				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16047.1					
Results Control Limits Outside Limit (Yes/No)					
1-Methylnaphthalene	mg/kg dry wt	< 0.010 ± 0.032	0.0 - 0.0100	No	
2-Methylnaphthalene	mg/kg dry wt	< 0.010 ± 0.032	0.0 - 0.0100	No	

			Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16047.1				
	Results	Control Limits	Outside Limit (Yes/No)				
kg dry wt	$< 0.010 \pm 0.0066$	0.0 - 0.0100	No				
kg dry wt	< 0.010 ± 0.0060	0.0 - 0.0100	No				
kg dry wt	$< 0.010 \pm 0.0060$	0.0 - 0.0100	No				
kg dry wt	< 0.010 ± 0.0062	0.0 - 0.0100	No				
kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No				
kg dry wt	< 0.010 ± 0.0064	0.0 – 0.0100	No				
kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No				
kg dry wt	< 0.010 ± 0.0064	0.0 - 0.0100	No				
kg dry wt	$< 0.010 \pm 0.0066$	0.0 - 0.0100	No				
kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No				
kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No				
kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No				
kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No				
kg dry wt	$< 0.010 \pm 0.0066$	0.0 - 0.0100	No				
kg dry wt	< 0.05 ± 0.031	0.0 - 0.050	No				
kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No				
kg dry wt	< 0.010 ± 0.0067	0.0 - 0.0100	No				
kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No				
	kg dry wt kg dry wt kg dry wt kg dry wt kg dry wt kg dry wt kg dry wt kg dry wt kg dry wt kg dry wt kg dry wt kg dry wt	kg dry wt < 0.010 ± 0.0064 kg dry wt < 0.010 ± 0.0066 kg dry wt < 0.010 ± 0.0066 kg dry wt < 0.010 ± 0.0066 kg dry wt < 0.010 ± 0.0066 kg dry wt < 0.010 ± 0.0066 kg dry wt < 0.010 ± 0.0066 kg dry wt < 0.010 ± 0.0066 kg dry wt < 0.010 ± 0.0066 kg dry wt < 0.010 ± 0.0066 kg dry wt < 0.010 ± 0.0066 kg dry wt < 0.010 ± 0.0066 kg dry wt < 0.010 ± 0.0066	kg dry wt $< 0.010 \pm 0.0064$ $0.0 - 0.0100$ kg dry wt $< 0.010 \pm 0.0066$ $0.0 - 0.0100$ kg dry wt $< 0.010 \pm 0.0066$ $0.0 - 0.0100$ kg dry wt $< 0.010 \pm 0.0066$ $0.0 - 0.0100$ kg dry wt $< 0.010 \pm 0.0066$ $0.0 - 0.0100$ kg dry wt $< 0.010 \pm 0.0066$ $0.0 - 0.0100$ kg dry wt $< 0.010 \pm 0.0066$ $0.0 - 0.0100$ kg dry wt $< 0.010 \pm 0.0066$ $0.0 - 0.0100$ kg dry wt $< 0.010 \pm 0.0066$ $0.0 - 0.0100$ kg dry wt $< 0.010 \pm 0.0066$ $0.0 - 0.050$ kg dry wt $< 0.010 \pm 0.0066$ $0.0 - 0.0100$ kg dry wt $< 0.010 \pm 0.0066$ $0.0 - 0.0100$				

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16047.2				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	mg/kg dry wt	$< 0.10 \pm 0.033$	0.0 - 0.0100	Yes
2-Methylnaphthalene	mg/kg dry wt	< 0.10 ± 0.036	0.0 - 0.0100	Yes
Acenaphthylene	mg/kg dry wt	< 0.10 ± 0.0066	0.0 – 0.0100	No
Acenaphthene	mg/kg dry wt	< 0.10 ± 0.0060	0.0 - 0.0100	No
Anthracene	mg/kg dry wt	< 0.10 ± 0.0060	0.0 - 0.0100	No
Benzo[a]anthracene	mg/kg dry wt	< 0.10 ± 0.0062	0.0 - 0.0100	No
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.10 ± 0.0066	0.0 - 0.0100	No
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.10 ± 0.0064	0.0 - 0.0100	No
Benzo[e]pyrene	mg/kg dry wt	< 0.10 ± 0.0066	0.0 - 0.0100	No
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.10 ± 0.0064	0.0 - 0.0100	No
Benzo[k]fluoranthene	mg/kg dry wt	< 0.10 ± 0.0066	0.0 - 0.0100	No
Chrysene	mg/kg dry wt	< 0.10 ± 0.0066	0.0 - 0.0100	No
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.10 ± 0.0066	0.0 - 0.0100	No
Fluoranthene	mg/kg dry wt	< 0.10 ± 0.0066	0.0 - 0.0100	No
Fluorene	mg/kg dry wt	< 0.10 ± 0.0066	0.0 - 0.0100	No
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.10 ± 0.0066	0.0 - 0.0100	No
Naphthalene	mg/kg dry wt	< 0.5 ± 0.031	0.0 - 0.050	No
Perylene	mg/kg dry wt	< 0.10 ± 0.0066	0.0 - 0.0100	No
Phenanthrene	mg/kg dry wt	< 0.10 ± 0.0077	0.0 - 0.0100	Yes
Pyrene	mg/kg dry wt	< 0.10 ± 0.0066	0.0 – 0.0100	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10668.16					
Results Control Limits Outside Limit (Yes/No)					
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No	

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10668.16					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Lead	mg/kg dry wt	$< 0.4 \pm 0.26$	-0.40 - 0.40	No	
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No	

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10668.32				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

John Marraar Briation Bigoot I	Jan. Topiro		Environmental Soils by ICP-I	,
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	$< 0.4 \pm 0.27$	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10670.53						
Results Control Limits Outside Limit (Yes/No)						
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No		
Total Recoverable Lead	mg/kg dry wt	$< 0.4 \pm 0.26$	-0.40 - 0.40	No		
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No		

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10670.61						
Results Control Limits Outside Limit (Yes/No)						
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No		
Total Recoverable Lead	mg/kg dry wt	$< 0.4 \pm 0.27$	-0.40 - 0.40	No		
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No		

Fluid 2 Blank (glass) - WS: TCLP - Toxicity Characteristic Leaching Procedure: 5052.7					
		Results	Control Limits	Outside Limit (Yes/No)	
TCLP Weight of Sample Taken	g	2,000	Undefined	N/A #1	
TCLP Extraction Fluid pH	pH Units	2.9 ± 0.1	Undefined	N/A #1	
TCLP Post Extraction Sample pH	pH Units	2.9 ± 0.1	Undefined	N/A #1	

Fluid 1 Blank (plastic) - WS: TCLP - Toxicity Characteristic Leaching Procedure: 5052.8					
Results Control Limits Outside Limit (Yes/No)					
TCLP Weight of Sample Taken	g	1,000	Undefined	N/A #1	
TCLP Extraction Fluid pH	pH Units	5.0 ± 0.1	Undefined	N/A #1	
TCLP Post Extraction Sample pH	pH Units	5.0 ± 0.1	Undefined	N/A #1	

20x Dilution Fluid 1 Blank (plastic) PrepWS TCLP PrepWS ExtnDig - WS: Env. Waters Totals by ICP-MS (EWT): 21177.60				
Results Control Limits Outside Limit (Ye				
Total Lead g/m ³	< 0.0021 ± 0.0014	-0.0021 – 0.0021	No	

20x Dilution Fluid 1 Blank (glass) PrepWS TCLP PrepWS ExtnDig - WS: Env. Waters Totals by ICP-MS (EWT): 21177.61				
		Results	Control Limits	Outside Limit (Yes/No)
Total Lead	g/m³	< 0.0021 ± 0.0014	-0.0021 - 0.0021	No

20x Dilution Fluid 1 Blank (plastic) PrepWS TCLP PrepWS ExtnDig - WS: Env. Waters Totals by ICP-MS (EWT): 21177.62				
Results Control Limits Outside Limit (Yes/N				
Total Lead g/m	< 0.0021 ± 0.0014	-0.0021 – 0.0021	No	

QC Spike QCs				
LCS OC/PAH xsSHOC - WS: Polycycli	c Ar	omatic Hydrocarbons Soil A	nalysis: 16045.2	
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	101 ± 25	78 – 122	No
2-Methylnaphthalene	%	95 ± 24	72 – 117	No
Acenaphthylene	%	98.0 ± 8.9	75 – 118	No
Acenaphthene	%	101 ± 29	84 – 119	No
Anthracene	%	100 ± 31	79 – 121	No
Benzo[a]anthracene	%	98 ± 26	81 – 123	No
Benzo[a]pyrene (BAP)	%	103.0 ± 7.9	76 – 123	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	96 ± 20	80 – 121	No
Benzo[e]pyrene	%	86.0 ± 6.6	78 – 110	No
Benzo[g,h,i]perylene	%	99 ± 18	80 – 124	No
Benzo[k]fluoranthene	%	99 ± 13	79 – 121	No
Chrysene	%	99 ± 15	83 – 121	No
Dibenzo[a,h]anthracene	%	101 ± 13	78 – 124	No
Fluoranthene	%	101 ± 11	81 – 122	No
Fluorene	%	101 ± 12	86 – 122	No
Indeno(1,2,3-c,d)pyrene	%	96.0 ± 8.9	83 – 123	No
Naphthalene	%	100 ± 25	84 – 118	No
Perylene	%	87.0 ± 6.7	76 – 107	No
Phenanthrene	%	98 ± 14	84 – 120	No
Pyrene	%	93 ± 12	79 – 123	No

LCS PrepWS xsMeBTEX PrepWS apHSV - BTEX by Headspace Soil Analysis: 6463.3					
	Results	Control Limits	Outside Limit (Yes/No)		
Benzene %	103.0 ± 9.5	87 – 111	No		
Toluene %	101.0 ± 7.5	89 – 110	No		
Ethylbenzene %	98.0 ± 7.5	95 – 113	No		
m&p-Xylene %	98.0 ± 8.7	87 – 114	No		
o-Xylene %	100.0 ± 7.9	88 – 114	No		

LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14101.3					
		Results	Control Limits	Outside Limit (Yes/No)	
Total hydrocarbons (C7 - C36)	%	95 ± 44	70 – 130	No	

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16047.3					
	Results	Control Limits	Outside Limit (Yes/No)		
1-Methylnaphthalene 9	101 ± 25	78 – 122	No		
2-Methylnaphthalene 9	97 ± 24	72 – 117	No		
Acenaphthylene 9	106.0 ± 9.6	75 – 118	No		

LCS OC/PAH xsSHOC - WS: Polycycli		Results	Control Limits	Outside Limit (Yes/No)
Acenaphthene	%	107 ± 31	84 – 119	No
Anthracene	%	102 ± 31	79 – 121	No
Benzo[a]anthracene	%	96 ± 25	81 – 123	No
Benzo[a]pyrene (BAP)	%	105.0 ± 8.0	76 – 123	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	103 ± 22	80 – 121	No
Benzo[e]pyrene	%	92.0 ± 7.0	78 – 110	No
Benzo[g,h,i]perylene	%	108 ± 19	80 – 124	No
Benzo[k]fluoranthene	%	100 ± 13	79 – 121	No
Chrysene	%	98 ± 15	83 – 121	No
Dibenzo[a,h]anthracene	%	109 ± 14	78 – 124	No
Fluoranthene	%	100 ± 11	81 – 122	No
Fluorene	%	107 ± 13	86 – 122	No
Indeno(1,2,3-c,d)pyrene	%	108 ± 10	83 – 123	No
Naphthalene	%	104 ± 26	84 – 118	No
Perylene	%	95.0 ± 7.3	76 – 107	No
Phenanthrene	%	103 ± 15	84 – 120	No
Pyrene	%	107 ± 14	79 – 123	No

LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14106.3					
	Results	Control Limits	Outside Limit (Yes/No)		
Total hydrocarbons (C7 - C36) %	100 ± 44	70 – 130	No		

Sample Spike QCs					
Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14101.24					
		Results	Control Limits	Outside Limit (Yes/No)	
Total hydrocarbons (C7 - C36)	%	85 ± 43	70 – 130	No	

TCLP Spike PrepWS ExtnDig - WS: Env. Waters Totals by ICP-MS (EWT): 21177.82					
Results Control Limits Outside Limit (Yes/No)					
Total Lead %	103.0 ± 6.2	80 – 120	No		

Reference Material QCs				
QC A7 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10665.17				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	17.6 ± 3.0	9.4 – 13.9	Yes #2

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10665.19					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	10.1 ± 2.0	8.0 – 11.0	No	
Total Recoverable Cadmium	mg/kg dry wt	0.396 ± 0.085	0.32 - 0.45	No	
Total Recoverable Chromium	mg/kg dry wt	25.9 ± 4.3	15.5 – 27	No	
Total Recoverable Nickel	mg/kg dry wt	6.4 ± 1.6	4.6 – 7.0	No	

QC A7 dup 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10665.55					
Results Control Limits Outside Limit (Yes/No)					
Total Recoverable Arsenic	mg/kg dry wt	13.5 ± 2.4	9.4 – 13.9	No	

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10665.74					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	10.9 ± 2.1	8.0 – 11.0	No	
Total Recoverable Cadmium	mg/kg dry wt	0.421 ± 0.088	0.32 - 0.45	No	
Total Recoverable Chromium	mg/kg dry wt	26.9 ± 4.4	15.5 – 27	No	

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10665.74					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Nickel	mg/kg dry wt	6.6 ± 1.6	4.6 – 7.0	No	

QC A7 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10667.17					
Results Control Limits Outside Limit (Yes/No					
Total Recoverable Arsenic	mg/kg dry wt	13.3 ± 2.4	9.4 – 13.9	No	
Total Recoverable Lead	mg/kg dry wt	17.5 ± 2.7	10.0 – 14.8	Yes #2	

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10667.19				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.2 ± 2.1	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.390 ± 0.085	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	25.4 ± 4.2	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	21.4 ± 3.2	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	48.7 ± 7.3	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	6.2 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	100.6 ± 7.6	79 – 105	No

QC A7 dup 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10667.38					
Results Control Limits Outside Limit (Yes/No)					
Total Recoverable Arsenic	mg/kg dry wt	13.5 ± 2.4	9.4 – 13.9	No	
Total Recoverable Lead	mg/kg dry wt	13.7 ± 2.1	10.0 – 14.8	No	

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10667.47				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.1 ± 2.0	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.403 ± 0.086	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	25.2 ± 4.2	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	21.6 ± 3.3	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	48.5 ± 7.3	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	6.4 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	100.6 ± 7.6	79 – 105	No

QC A7 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10668.17				
Results Control Limits Outside Limit (Yes/N				
Total Recoverable Arsenic	mg/kg dry wt	13.5 ± 2.4	9.4 – 13.9	No
Total Recoverable Lead	mg/kg dry wt	14.4 ± 2.2	10.0 – 14.8	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10668.19				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	9.4 ± 2.0	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.417 ± 0.087	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	25.0 ± 4.1	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	21.1 ± 3.2	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	62.8 ± 9.4	39 – 51	Yes #2
Total Recoverable Nickel	mg/kg dry wt	6.3 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	94.8 ± 7.2	79 – 105	No

QC A7 dup 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10668.41				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	13.2 ± 2.4	9.4 – 13.9	No
Total Recoverable Lead	mg/kg dry wt	15.8 ± 2.4	10.0 – 14.8	Yes #2

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10668.52				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.0 ± 2.0	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.445 ± 0.090	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	25.1 ± 4.1	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	21.8 ± 3.3	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	47.8 ± 7.2	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	6.0 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	99.3 ± 7.5	79 – 105	No

QC A7 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10668.77				
Results Control Limits Outside Limit (Yes/No				
Total Recoverable Arsenic	mg/kg dry wt	12.6 ± 2.3	9.4 – 13.9	No
Total Recoverable Lead	mg/kg dry wt	12.9 ± 2.0	10.0 – 14.8	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10668.79				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	9.1 ± 1.9	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.374 ± 0.084	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	23.5 ± 3.9	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	19.8 ± 3.0	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	56.1 ± 8.4	39 – 51	Yes #2
Total Recoverable Nickel	mg/kg dry wt	5.9 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	90.5 ± 6.9	79 – 105	No

QC A7 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10670.54				
Results Control Limits Outside Limit (Yes				Outside Limit (Yes/No)
Total Recoverable Lead	mg/kg dry wt	13.9 ± 2.1	10.0 – 14.8	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10670.56					
Results Control Limits Outside Limit (Yes/No)					
Total Recoverable Copper	mg/kg dry wt	19.2 ± 3.0	17.0 – 22	No	
Total Recoverable Lead	mg/kg dry wt	45.1 ± 6.8	39 – 51	No	
Total Recoverable Zinc	mg/kg dry wt	91.2 ± 7.0	79 – 105	No	

QC A7 dup 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10670.65				
Results Control Limits Outside Limit (Yes/No)				
Total Recoverable Lead	mg/kg dry wt	13.7 ± 2.1	10.0 – 14.8	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10670.70				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Copper	mg/kg dry wt	21.1 ± 3.2	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	49.8 ± 7.5	39 – 51	No
Total Recoverable Zinc	mg/kg dry wt	98.8 ± 7.5	79 – 105	No

1% 50ppb TRDig and TDig ME QC PrepWS ExtnDig - WS: Env. Waters Totals by ICP-MS (EWT): 21177.63				
Results Control Limits Outside Limit (Yes/No)				
Total Lead g/r	0.0504 ± 0.0034	0.045 - 0.055	No	

Replicates				
WS: Env. Waters Totals	by ICP-MS (EWT): 21	177.81		
		Replicate 1	Replicate 2	Pass/Fail
Total Lead	g/m³	0.555 ± 0.034	0.565 ± 0.034	Pass

Amended Report: This quality assurance report replaces report '3620390-QCPv1' issued on 10-Jul-2024 at 4:53 pm. Reason for amendment: TCLP lead added to one sample.

^{#1} Control limits have not been established for this analyte.

^{#2} The recovery for this analyte was outside the acceptable recovery range of the method. The corresponding sample result was accepted because the related recovery in the other QC material analysed was within the expected range.



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Quality Assurance Report

Page 1 of 7

QCPv1

Client: Contact: Aurecon New Zealand Limited

Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 2292 Tauranga 3140 Lab No: Date Received: Date Reported:

10-Jul-2024 15-Jul-2024

3624078

Quote No: Order No: 126272

Client Reference: 521290-064 Submitted By: 521290-064

Sample Specific QCs			
BTEX in Soil by Headspace GC-MS			
	3624078.1	Control Limits	(

	3624078.1	Control Limits	Outside Limit (Yes/No)
Benzene-d6 %	6 127	72 – 140	No

Polycyclic Aromatic Hydrocarbons Screening in Soil					
		3624078.1	Control Limits	Outside Limit (Yes/No)	
1-methylnaphthalene-d10	%	112	65 – 130	No	
Benzo[a]pyrene-d12	%	117	70 – 140	No	
Fluoranthene-d10	%	106	66 – 130	No	

BTEX in Soil by Headspace GC-MS				
		3624078.2	Control Limits	Outside Limit (Yes/No)
Benzene-d6	%	124	72 – 140	No

Polycyclic Aromatic Hydrocarbons Screening in Soil				
		3624078.2	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	98	65 – 130	No
Benzo[a]pyrene-d12	%	104	70 – 140	No
Fluoranthene-d10	%	101	66 – 130	No

Blank QCs						
Digest Blank 1 PrepWS esD	Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10683.16					
		Results	Control Limits	Outside Limit (Yes/No)		
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No		
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No		
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No		
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No		
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No		
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No		
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No		

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10683.33					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No	
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No	
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No	

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10685.16				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	$< 0.4 \pm 0.26$	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10685.46				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.27	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16059.1				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	mg/kg dry wt	$< 0.010 \pm 0.032$	0.0 – 0.0100	No
2-Methylnaphthalene	mg/kg dry wt	< 0.010 ± 0.032	0.0 – 0.0100	No
Acenaphthylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Acenaphthene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 - 0.0100	No
Anthracene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 - 0.0100	No
Benzo[a]anthracene	mg/kg dry wt	< 0.010 ± 0.0062	0.0 - 0.0100	No
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 – 0.0100	No
Benzo[e]pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 - 0.0100	No
Benzo[k]fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Chrysene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Dibenzo[a,h]anthracene	mg/kg dry wt	$< 0.010 \pm 0.0066$	0.0 - 0.0100	No
Fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Fluorene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Naphthalene	mg/kg dry wt	< 0.05 ± 0.031	0.0 - 0.050	No
Perylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Phenanthrene	mg/kg dry wt	< 0.010 ± 0.0067	0.0 - 0.0100	No
Pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16060.1					
Results Control Limits Outside Limit (Yes/No					
1-Methylnaphthalene	mg/kg dry wt	$< 0.010 \pm 0.032$	0.0 - 0.0100	No	
2-Methylnaphthalene	mg/kg dry wt	< 0.015 ± 0.032	0.0 - 0.0100	Yes	
Acenaphthylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Acenaphthene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 - 0.0100	No	

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16060.1				
		Results	Control Limits	Outside Limit (Yes/No)
Anthracene	mg/kg dry wt	$< 0.010 \pm 0.0061$	0.0 - 0.0100	No
Benzo[a]anthracene	mg/kg dry wt	< 0.010 ± 0.0062	0.0 – 0.0100	No
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 - 0.0100	No
Benzo[e]pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 - 0.0100	No
Benzo[k]fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Chrysene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Fluorene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Naphthalene	mg/kg dry wt	< 0.05 ± 0.031	0.0 - 0.050	No
Perylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Phenanthrene	mg/kg dry wt	< 0.010 ± 0.0067	0.0 - 0.0100	No
Pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10688.16				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10688.34				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

blank PrepWS xsMeBTEX PrepWS apHSV - BTEX by Headspace Soil Analysis: 6467.2				
		Results	Control Limits	Outside Limit (Yes/No)
Benzene	mg/kg dry wt	$< 0.05 \pm 0.024$	0.0 - 0.033	No
Toluene	mg/kg dry wt	$< 0.05 \pm 0.023$	0.0 - 0.033	No
Ethylbenzene	mg/kg dry wt	$< 0.05 \pm 0.014$	0.0 - 0.033	No
m&p-Xylene	mg/kg dry wt	< 0.10 ± 0.037	0.0 - 0.067	No
o-Xylene	mg/kg dry wt	< 0.05 ± 0.026	0.0 - 0.033	No

QC Spike QCs				
LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14115.3				
		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	116 ± 46	70 – 130	No

LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14116.3				
Results Control Limits Outside Limit (Yes/No)				
Total hydrocarbons (C7 - C36)	91 ± 43	70 – 130	No	

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16059.2				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	100 ± 25	78 – 122	No
2-Methylnaphthalene	%	95 ± 24	72 – 117	No
Acenaphthylene	%	102.0 ± 9.2	75 – 118	No
Acenaphthene	%	103 ± 30	84 – 119	No
Anthracene	%	100 ± 31	79 – 121	No
Benzo[a]anthracene	%	100 ± 27	81 – 123	No
Benzo[a]pyrene (BAP)	%	100.0 ± 7.7	76 – 123	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	97 ± 20	80 – 121	No
Benzo[e]pyrene	%	87.0 ± 6.7	78 – 110	No
Benzo[g,h,i]perylene	%	93 ± 16	80 – 124	No
Benzo[k]fluoranthene	%	96 ± 13	79 – 121	No
Chrysene	%	97 ± 15	83 – 121	No
Dibenzo[a,h]anthracene	%	93 ± 12	78 – 124	No
Fluoranthene	%	98.0 ± 9.9	81 – 122	No
Fluorene	%	104 ± 13	86 – 122	No
Indeno(1,2,3-c,d)pyrene	%	92.0 ± 8.5	83 – 123	No
Naphthalene	%	101 ± 25	84 – 118	No
Perylene	%	90.0 ± 6.9	76 – 107	No
Phenanthrene	%	100 ± 15	84 – 120	No
Pyrene	%	103 ± 14	79 – 123	No

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16060.2				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	108 ± 27	78 – 122	No
2-Methylnaphthalene	%	104 ± 26	72 – 117	No
Acenaphthylene	%	118 ± 11	75 – 118	No
Acenaphthene	%	114 ± 33	84 – 119	No
Anthracene	%	112 ± 34	79 – 121	No
Benzo[a]anthracene	%	110 ± 29	81 – 123	No
Benzo[a]pyrene (BAP)	%	106.0 ± 8.1	76 – 123	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	104 ± 22	80 – 121	No
Benzo[e]pyrene	%	91.0 ± 7.0	78 – 110	No
Benzo[g,h,i]perylene	%	106 ± 19	80 – 124	No
Benzo[k]fluoranthene	%	101 ± 13	79 – 121	No
Chrysene	%	106 ± 16	83 – 121	No
Dibenzo[a,h]anthracene	%	109 ± 14	78 – 124	No
Fluoranthene	%	109 ± 11	81 – 122	No
Fluorene	%	109 ± 13	86 – 122	No
Indeno(1,2,3-c,d)pyrene	%	107.0 ± 9.9	83 – 123	No

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16060.2						
Results Control Limits Outside Limit (Yes/No)						
Naphthalene	%	104 ± 26	84 – 118	No		
Perylene	%	94.0 ± 7.2	76 – 107	No		
Phenanthrene	%	109 ± 16	84 – 120	No		
Pyrene	%	113 ± 15	79 – 123	No		

LCS PrepWS xsMeBTEX PrepWS apHSV - BTEX by Headspace Soil Analysis: 6467.3				
	Results	Control Limits	Outside Limit (Yes/No)	
Benzene %	102.0 ± 9.4	87 – 111	No	
Toluene %	103.0 ± 7.7	89 – 110	No	
Ethylbenzene %	104.0 ± 8.0	95 – 113	No	
m&p-Xylene %	103.0 ± 9.1	87 – 114	No	
o-Xylene %	106.0 ± 8.3	88 – 114	No	

Sample Spike QCs				
Matrix Spike TPH PrepWS xsSHC	C - Total F	Petroleum Hydrocarbon So	il Analysis: 14115.32	
		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	107 ± 45	70 – 130	No

Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14116.24				
	Results	Control Limits	Outside Limit (Yes/No)	
Total hydrocarbons (C7 - C36)	84 ± 43	70 – 130	No	

sample spike PrepWS xsMeBTEX PrepWS apHSV - BTEX by Headspace Soil Analysis: 6467.28				
	Results	Control Limits	Outside Limit (Yes/No)	
Benzene %	129 ± 12	80 – 140	No	
Toluene %	130.0 ± 9.7	83 – 140	No	
Ethylbenzene %	132 ± 11	85 – 143	No	
m&p-Xylene %	131 ± 12	81 – 144	No	
o-Xylene %	134 ± 11	81 – 146	No	

Reference Material QCs				
QC A7 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10683.17				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.4 ± 2.2	9.4 – 13.9	No
Total Recoverable Lead	mg/kg dry wt	12.9 ± 2.0	10.0 – 14.8	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10683.19				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	9.9 ± 2.0	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.415 ± 0.087	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	24.2 ± 4.0	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	20.2 ± 3.1	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	47.3 ± 7.1	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	6.0 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	94.8 ± 7.2	79 – 105	No

QC A7 dup 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10683.43				
Results Control Limits Outside Limit (Yes/N				Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	12.1 ± 2.3	9.4 – 13.9	No
Total Recoverable Lead	mg/kg dry wt	12.1 ± 1.9	10.0 – 14.8	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10683.63				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.3 ± 2.1	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.380 ± 0.084	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	23.1 ± 3.9	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	20.0 ± 3.1	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	45.5 ± 6.9	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	6.3 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	94.0 ± 7.2	79 – 105	No

QC A7 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10685.17				
Results Control Limits Outside Lim				
Total Recoverable Arsenic	mg/kg dry wt	11.8 ± 2.2	9.4 – 13.9	No
Total Recoverable Lead	mg/kg dry wt	11.7 ± 1.8	10.0 – 14.8	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10685.19				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	9.4 ± 2.0	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.391 ± 0.085	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	23.2 ± 3.9	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	19.8 ± 3.0	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	45.9 ± 6.9	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	6.2 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	91.6 ± 7.0	79 – 105	No

QC A7 dup 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10685.34				
Results Control Limits Outside Limit (Yes/No)				
Total Recoverable Arsenic	mg/kg dry wt	11.1 ± 2.2	9.4 – 13.9	No
Total Recoverable Lead	mg/kg dry wt	12.7 ± 2.0	10.0 – 14.8	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10685.60				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	9.7 ± 2.0	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.373 ± 0.084	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	23.3 ± 3.9	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	20.0 ± 3.1	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	47.0 ± 7.1	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	6.3 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	92.2 ± 7.1	79 – 105	No

QC A7 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10688.17				
Results Control Limits Outside Limit (Ye				Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.6 ± 2.2	9.4 – 13.9	No
Total Recoverable Lead	mg/kg dry wt	12.2 ± 1.9	10.0 – 14.8	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10688.19				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	9.7 ± 2.0	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.379 ± 0.084	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	22.9 ± 3.8	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	19.3 ± 3.0	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	44.6 ± 6.7	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	5.9 ± 1.6	4.6 – 7.0	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10688.19				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Zinc	mg/kg dry wt	89.1 ± 6.8	79 – 105	No

QC A7 dup 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10688.50					
Results Control Limits Outside Limit (Yes/No)					
Total Recoverable Arsenic	mg/kg dry wt	12.3 ± 2.3	9.4 – 13.9	No	
Total Recoverable Lead	mg/kg dry wt	12.6 ± 2.0	10.0 – 14.8	No	

		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	9.4 ± 2.0	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.375 ± 0.084	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	22.8 ± 3.8	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	19.1 ± 3.0	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	48.5 ± 7.3	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	5.8 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	89.6 ± 6.9	79 – 105	No

 Lab No:
 3624078-QCPv1
 Hill Labs
 Page 7 of 7



6 0508 HILL LAB (44 555 22) **%** +64 7 858 2000 mail@hill-labs.co.nz www.hill-labs.co.nz

Quality Assurance Report

Page 1 of 3

QCPv1

Client: Contact: Aurecon New Zealand Limited

Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 2292 Tauranga 3140 Lab No: **Date Received: Date Reported:**

11-Jul-2024 17-Jul-2024

3625593

Quote No: 126272

Order No:

Submitted By:

Client Reference: 521290-064 Andrew Allcock

Sample Specific QCs					
Polycyclic Aromatic Hydrocarbons Screening in Soil					
		3625593.2	Control Limits	Outside Limit (Yes/No)	
1-methylnaphthalene-d10	%	106	65 – 130	No	
Benzo[a]pyrene-d12	%	106	70 – 140	No	
Fluoranthene-d10	%	104	66 – 130	No	

Polycyclic Aromatic Hydrocarbons Screening in Soil				
		3625593.4	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	107	65 – 130	No
Benzo[a]pyrene-d12	%	120	70 – 140	No
Fluoranthene-d10	%	118	66 – 130	No

Blank QCs					
Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10699.16					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No	
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No	
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No	

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10699.40				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16067.1					
		Results	Control Limits	Outside Limit (Yes/No)	
1-Methylnaphthalene	mg/kg dry wt	< 0.010 ± 0.032	0.0 - 0.0100	No	
2-Methylnaphthalene	mg/kg dry wt	< 0.018 ± 0.032	0.0 - 0.0100	Yes #1	
Acenaphthylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Acenaphthene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 - 0.0100	No	

3625593-QCPv1 Hill Labs Page 1 of 3 Lab No:

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16067.1					
		Results	Control Limits	Outside Limit (Yes/No)	
Anthracene	mg/kg dry wt	$< 0.010 \pm 0.0060$	0.0 - 0.0100	No	
Benzo[a]anthracene	mg/kg dry wt	< 0.010 ± 0.0063	0.0 - 0.0100	No	
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 - 0.0100	No	
Benzo[e]pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 - 0.0100	No	
Benzo[k]fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Chrysene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Fluorene	mg/kg dry wt	< 0.010 ± 0.0067	0.0 - 0.0100	No	
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Naphthalene	mg/kg dry wt	< 0.05 ± 0.031	0.0 - 0.050	No	
Perylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Phenanthrene	mg/kg dry wt	< 0.010 ± 0.0067	0.0 - 0.0100	No	
Pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	

QC Spike QCs				
LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14125.3				
		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	92 ± 43	70 – 130	No

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16067.2				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	99 ± 25	78 – 122	No
2-Methylnaphthalene	%	92 ± 23	72 – 117	No
Acenaphthylene	%	103.0 ± 9.3	75 – 118	No
Acenaphthene	%	107 ± 31	84 – 119	No
Anthracene	%	106 ± 33	79 – 121	No
Benzo[a]anthracene	%	108 ± 29	81 – 123	No
Benzo[a]pyrene (BAP)	%	104.0 ± 8.0	76 – 123	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	103 ± 22	80 – 121	No
Benzo[e]pyrene	%	90.0 ± 6.9	78 – 110	No
Benzo[g,h,i]perylene	%	103 ± 18	80 – 124	No
Benzo[k]fluoranthene	%	105 ± 14	79 – 121	No
Chrysene	%	99 ± 15	83 – 121	No
Dibenzo[a,h]anthracene	%	103 ± 14	78 – 124	No
Fluoranthene	%	107 ± 11	81 – 122	No
Fluorene	%	109 ± 13	86 – 122	No
Indeno(1,2,3-c,d)pyrene	%	102.0 ± 9.4	83 – 123	No
Naphthalene	%	106 ± 26	84 – 118	No
Perylene	%	87.0 ± 6.7	76 – 107	No
Phenanthrene	%	101 ± 15	84 – 120	No
Pyrene	%	110 ± 15	79 – 123	No

Sample Spike QCs					
Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14125.27					
		Results	Control Limits	Outside Limit (Yes/No)	
Total hydrocarbons (C7 - C36)	%	89 ± 43	70 – 130	No	

Reference Material QCs				
QC A7 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10699.17				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	12.0 ± 2.3	9.4 – 13.9	No
Total Recoverable Lead	mg/kg dry wt	13.6 ± 2.1	10.0 – 14.8	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10699.19				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	9.5 ± 2.0	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.377 ± 0.084	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	25.1 ± 4.2	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	20.8 ± 3.2	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	44.7 ± 6.7	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	6.8 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	97.5 ± 7.4	79 – 105	No

QC A7 dup 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10699.29				
Results Control Limits Outside Limit (Yes/No)				
Total Recoverable Arsenic	mg/kg dry wt	12.2 ± 2.3	9.4 – 13.9	No
Total Recoverable Lead	mg/kg dry wt	14.1 ± 2.2	10.0 – 14.8	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10699.45				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.2 ± 2.0	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.412 ± 0.087	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	24.0 ± 4.0	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	21.0 ± 3.2	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	47.2 ± 7.1	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	6.5 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	102.4 ± 7.7	79 – 105	No

^{#1} Elevated blank levels were observed for this analyte. The reporting limit has been increased due to consistent background levels.



6 0508 HILL LAB (44 555 22) **%** +64 7 858 2000 mail@hill-labs.co.nz www.hill-labs.co.nz

Quality Assurance Report

Page 1 of 5

Client: Contact: Aurecon New Zealand Limited

Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 Lab No: 3629193 **Date Received:**

17-Jul-2024

12-Aug-2024

(Amended)

QCPv3

Quote No: Order No:

Client Reference:

Submitted By:

Date Reported:

126272

521290 - 064 Andrew Allcock

Sample Specific QCs

BTEX in Soil by Headspace GC-MS						
		3629193.1	Control Limits	Outside Limit (Yes/No)		
Benzene-d6 %	%	112	72 – 140	No		

Polycyclic Aromatic Hydrocarbons Screening in Soil				
		3629193.1	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	102	65 – 130	No
Benzo[a]pyrene-d12	%	108	70 – 140	No
Fluoranthene-d10	%	99	66 – 130	No

Blank QCs					
Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10720.16					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No	
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No	
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No	

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10720.29				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16081.1				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	mg/kg dry wt	$< 0.010 \pm 0.032$	0.0 – 0.0100	No
2-Methylnaphthalene	mg/kg dry wt	0.011 ± 0.032	0.0 – 0.0100	Yes
Acenaphthylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Acenaphthene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 - 0.0100	No
Anthracene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 - 0.0100	No
Benzo[a]anthracene	mg/kg dry wt	< 0.010 ± 0.0062	0.0 – 0.0100	No

3629193-QCPv3 Hill Labs Page 1 of 5 Lab No:

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16081.1				
		Results	Control Limits	Outside Limit (Yes/No)
Benzo[a]pyrene (BAP)	mg/kg dry wt	$< 0.010 \pm 0.0066$	0.0 – 0.0100	No
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 – 0.0100	No
Benzo[e]pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 – 0.0100	No
Benzo[k]fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Chrysene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Fluorene	mg/kg dry wt	< 0.010 ± 0.0067	0.0 – 0.0100	No
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Naphthalene	mg/kg dry wt	< 0.05 ± 0.031	0.0 - 0.050	No
Perylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Phenanthrene	mg/kg dry wt	< 0.010 ± 0.0067	0.0 - 0.0100	No
Pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No

blank PrepWS xsMeBTEX PrepWS apHSV - BTEX by Headspace Soil Analysis: 6476.2					
		Results	Control Limits	Outside Limit (Yes/No)	
Benzene	mg/kg dry wt	$< 0.05 \pm 0.024$	0.0 - 0.033	No	
Toluene	mg/kg dry wt	< 0.05 ± 0.023	0.0 - 0.033	No	
Ethylbenzene	mg/kg dry wt	< 0.05 ± 0.014	0.0 - 0.033	No	
m&p-Xylene	mg/kg dry wt	< 0.10 ± 0.037	0.0 - 0.067	No	
o-Xylene	mg/kg dry wt	< 0.05 ± 0.026	0.0 - 0.033	No	

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10742.16				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10742.23				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10828.16				
Results Control Limits Outside Limit (Yes/No)				
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10828.48				
Results Control Limits Outside Limit (Yes/No)				
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No

50x Manual Dilution Digest Blank PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10828.71				
Results Control Limits Outside Limit (Yes/N				Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No

QC Spike QCs

LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14137.3

	Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	6 91 ± 43	70 – 130	No

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16081.2				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	99 ± 25	78 – 122	No
2-Methylnaphthalene	%	94 ± 23	72 – 117	No
Acenaphthylene	%	104.0 ± 9.4	75 – 118	No
Acenaphthene	%	105 ± 30	84 – 119	No
Anthracene	%	100 ± 31	79 – 121	No
Benzo[a]anthracene	%	105 ± 28	81 – 123	No
Benzo[a]pyrene (BAP)	%	104.0 ± 8.0	76 – 123	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	104 ± 22	80 – 121	No
Benzo[e]pyrene	%	91.0 ± 7.0	78 – 110	No
Benzo[g,h,i]perylene	%	112 ± 20	80 – 124	No
Benzo[k]fluoranthene	%	105 ± 14	79 – 121	No
Chrysene	%	102 ± 16	83 – 121	No
Dibenzo[a,h]anthracene	%	115 ± 15	78 – 124	No
Fluoranthene	%	97.0 ± 9.8	81 – 122	No
Fluorene	%	108 ± 13	86 – 122	No
Indeno(1,2,3-c,d)pyrene	%	110 ± 11	83 – 123	No
Naphthalene	%	101 ± 25	84 – 118	No
Perylene	%	92.0 ± 7.0	76 – 107	No
Phenanthrene	%	100 ± 15	84 – 120	No
Pyrene	%	106 ± 14	79 – 123	No

LCS PrepWS xsMeBTEX PrepWS apHSV - BTEX by Headspace Soil Analysis: 6476.3				
	Results	Control Limits	Outside Limit (Yes/No)	
Benzene %	102.0 ± 9.4	87 – 111	No	
Toluene %	102.0 ± 7.6	89 – 110	No	
Ethylbenzene %	105.0 ± 8.0	95 – 113	No	
m&p-Xylene %	103.0 ± 9.1	87 – 114	No	
o-Xylene %	105.0 ± 8.2	88 – 114	No	

Sample Spike QCs

Matrix Spike TPH PrepWS xsSHOC -	Total Petroleum Hydrocarbon	Soil Analysis: 14137 12

		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	88 ± 43	70 – 130	No

sample spike PrepWS xsMeBTEX PrepWS apHSV - BTEX by Headspace Soil Analysis: 6476.8

	Results	Control Limits	Outside Limit (Yes/No)
Benzene %	113 ± 11	80 – 140	No
Toluene %	116.0 ± 8.6	83 – 140	No

sample spike PrepWS xsMeBTEX PrepWS apHSV - BTEX by Headspace Soil Analysis: 6476.8				
		Results	Control Limits	Outside Limit (Yes/No)
Ethylbenzene	%	121.0 ± 9.2	85 – 143	No
m&p-Xylene	%	118 ± 11	81 – 144	No
o-Xylene	%	121.0 ± 9.5	81 – 146	No

Reference Material QCs					
QC A7 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10720.17					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	12.0 ± 2.3	9.4 – 13.9	No	
Total Recoverable Lead	ma/ka drv wt	12.4 ± 1.9	10.0 – 14.8	No	

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10720.19				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	9.9 ± 2.0	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.403 ± 0.086	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	26.1 ± 4.3	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	21.8 ± 3.3	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	44.3 ± 6.7	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	7.1 ± 1.6	4.6 – 7.0	Yes #1
Total Recoverable Zinc	mg/kg dry wt	101.0 ± 7.6	79 – 105	No

QC A7 dup 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10720.39				
Results Control Limits Outside Limit (Yes/No)				
Total Recoverable Arsenic	mg/kg dry wt	11.2 ± 2.2	9.4 – 13.9	No
Total Recoverable Lead	mg/kg dry wt	11.5 ± 1.8	10.0 – 14.8	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10720.59				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	9.5 ± 2.0	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.430 ± 0.089	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	24.8 ± 4.1	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	20.9 ± 3.2	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	43.3 ± 6.5	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	6.3 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	96.8 ± 7.4	79 – 105	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10742.17				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.8 ± 2.1	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.89 ± 0.14	0.72 – 0.99	No
Total Recoverable Chromium	mg/kg dry wt	26.9 ± 4.4	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.3 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.4 ± 5.0	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	14.4 ± 2.3	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	201 ± 15	171 – 230	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10742.19				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	9.7 ± 2.0	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.403 ± 0.086	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	24.9 ± 4.1	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	20.8 ± 3.2	17.0 – 22	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10742.19					
Results Control Limits Outside Limit (Yes/No)					
Total Recoverable Lead	mg/kg dry wt	45.1 ± 6.8	39 – 51	No	
Total Recoverable Nickel	mg/kg dry wt	5.9 ± 1.6	4.6 – 7.0	No	
Total Recoverable Zinc	mg/kg dry wt	94.5 ± 7.2	79 – 105	No	

QC A7 dup 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10742.26				
Results Control Limits Outside Limit (Yes/No)				
Total Recoverable Arsenic	mg/kg dry wt	12.3 ± 2.3	9.4 – 13.9	No
Total Recoverable Lead mg/kg dry wt 13.3 ± 2.0 10.0 – 14.8 No				

QC A8 FG PrepWS esDig -		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.0 ± 2.0	8.0 – 11.0	No No
Total Recoverable Cadmium	mg/kg dry wt	0.411 ± 0.087	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	24.7 ± 4.1	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	21.3 ± 3.2	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	47.1 ± 7.1	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	6.0 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	97.2 ± 7.4	79 – 105	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10828.17				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.3 ± 2.2	9.3 – 12.9	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10828.19				
Results Control Limits Outside Limit (Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.6 ± 2.1	8.0 – 11.0	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10828.23				
Results Control Limits Outside Limit (Yes/No)				
Total Recoverable Arsenic	mg/kg dry wt	10.6 ± 2.1	8.0 – 11.0	No

QC A7 dup 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10828.33				
Results Control Limits Outside Limit (Yes/No				Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	12.2 ± 2.3	9.4 – 13.9	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10828.72				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.9 ± 2.1	9.3 – 12.9	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10828.74				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	9.5 ± 2.0	8.0 – 11.0	No

Amended Report: This quality assurance report replaces report '3629193-QCPv2' issued on 23-Jul-2024 at 3:27 pm. Reason for amendment: Testing added to sample 2.

^{#1} The recovery for this analyte was outside the acceptable recovery range of the method. The corresponding sample result was accepted because the related recovery in the other QC material analysed was within the expected range.



6 0508 HILL LAB (44 555 22) **%** +64 7 858 2000 mail@hill-labs.co.nz www.hill-labs.co.nz

Quality Assurance Report

Page 1 of 6

QCPv1

Client: Contact: Aurecon New Zealand Limited

Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 Lab No: **Date Received: Date Reported:**

24-Jul-2024 29-Jul-2024

Quote No: Order No:

126272

3634409

Client Reference: 521290-064 Submitted By:

Tiana Hill

Sample Specific QCs				
Polycyclic Aromatic Hydrocarbons Screening in Soil				
		3634409.4	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	107	65 – 130	No
Benzo[a]pyrene-d12	%	109	70 – 140	No
Fluoranthene-d10	%	108	66 – 130	No

Blank QCs				
Blank 1 PrepWS xsSHOC - V	VS: Polycyclic	Aromatic Hydrocarbons So	il Analysis: 16105.1	
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	mg/kg dry wt	$< 0.010 \pm 0.032$	0.0 - 0.0100	No
2-Methylnaphthalene	mg/kg dry wt	$< 0.010 \pm 0.032$	0.0 – 0.0100	No
Acenaphthylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Acenaphthene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 – 0.0100	No
Anthracene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 – 0.0100	No
Benzo[a]anthracene	mg/kg dry wt	< 0.010 ± 0.0062	0.0 – 0.0100	No
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 - 0.0100	No
Benzo[e]pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 - 0.0100	No
Benzo[k]fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Chrysene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Fluorene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Naphthalene	mg/kg dry wt	< 0.05 ± 0.031	0.0 - 0.050	No
Perylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Phenanthrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10760.16				
Results Control Limits Outside Limit (Yes				
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10760.16				
Results Control Limits Outside Limit (Yes/N				
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	$< 4 \pm 2.7$	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10760.40				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	$< 0.4 \pm 0.26$	-0.40 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10761.16				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10761.62				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.27	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10763.16				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	$< 0.10 \pm 0.066$	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10763.43				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 — 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10763.43				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Lead	mg/kg dry wt	$< 0.4 \pm 0.26$	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

50x Manual Dilution Digest Blank PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10763.78				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

QC Spike QCs					
LCS TPH PrepWS xsSHOC - Total	LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14155.3				
Results Control Limits Outside Limit (Yes/No)					
Total hydrocarbons (C7 - C36)	%	100 ± 44	70 – 130	No	

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16105.2				
	Results	Control Limits	Outside Limit (Yes/No)	
1-Methylnaphthalene	% 111 ± 28	78 – 122	No	
2-Methylnaphthalene	% 106 ± 26	72 – 117	No	
Acenaphthylene	% 108.0 ± 9.8	75 – 118	No	
Acenaphthene	% 108 ± 31	84 – 119	No	
Anthracene	% 112 ± 34	79 – 121	No	
Benzo[a]anthracene	% 110 ± 29	81 – 123	No	
Benzo[a]pyrene (BAP)	% 108.0 ± 8.3	76 – 123	No	
Benzo[b]fluoranthene + Benzo[j]fluoranthene	% 106 ± 22	80 – 121	No	
Benzo[e]pyrene	% 92.0 ± 7.0	78 – 110	No	
Benzo[g,h,i]perylene	% 104 ± 18	80 – 124	No	
Benzo[k]fluoranthene	% 103 ± 13	79 – 121	No	
Chrysene	% 108 ± 16	83 – 121	No	
Dibenzo[a,h]anthracene	% 106 ± 14	78 – 124	No	
Fluoranthene	% 104 ± 11	81 – 122	No	
Fluorene	% 105 ± 13	86 – 122	No	
Indeno(1,2,3-c,d)pyrene	% 104.0 ± 9.6	83 – 123	No	
Naphthalene	% 107 ± 27	84 – 118	No	
Perylene	% 93.0 ± 7.1	76 – 107	No	
Phenanthrene	% 107 ± 15	84 – 120	No	
Pyrene	% 107 ± 14	79 – 123	No	

Sample Spike QCs Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14155.12 Results Control Limits Outside Limit (Yes/No) Total hydrocarbons (C7 - C36) % 90 ± 43 70 – 130 No

Spike PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16105.4				
Results Control Limits Outside Limit (Yes/No				
1-Methylnaphthalene %	110 ± 27	77 – 126	No	

Spike PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16105.4				
		Results	Control Limits	Outside Limit (Yes/No)
2-Methylnaphthalene	%	105 ± 26	71 – 121	No
Acenaphthylene	%	106.0 ± 9.6	75 – 120	No
Acenaphthene	%	108 ± 31	84 – 121	No
Anthracene	%	109 ± 33	80 – 122	No
Benzo[a]anthracene	%	107 ± 28	81 – 126	No
Benzo[a]pyrene (BAP)	%	105.0 ± 8.0	77 – 125	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	104 ± 22	79 – 125	No
Benzo[e]pyrene	%	91.0 ± 7.0	77 – 115	No
Benzo[g,h,i]perylene	%	103 ± 18	77 – 129	No
Benzo[k]fluoranthene	%	101 ± 13	81 – 123	No
Chrysene	%	105 ± 16	83 – 125	No
Dibenzo[a,h]anthracene	%	104 ± 14	78 – 128	No
Fluoranthene	%	102 ± 11	78 – 127	No
Fluorene	%	106 ± 13	86 – 125	No
Indeno(1,2,3-c,d)pyrene	%	102.0 ± 9.4	80 – 129	No
Naphthalene	%	107 ± 27	84 – 120	No
Perylene	%	92.0 ± 7.0	78 – 110	No
Phenanthrene	%	106 ± 15	82 – 123	No
Pyrene	%	103 ± 14	76 – 128	No

Reference Material QCs						
SETOC-705 QC - WS: High	SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10760.17					
		Results	Control Limits	Outside Limit (Yes/No)		
Total Recoverable Arsenic	mg/kg dry wt	11.0 ± 2.1	9.3 – 12.9	No		
Total Recoverable Cadmium	mg/kg dry wt	0.87 ± 0.14	0.72 – 0.99	No		
Total Recoverable Chromium	mg/kg dry wt	26.9 ± 4.4	21 – 32	No		
Total Recoverable Copper	mg/kg dry wt	13.3 ± 2.3	11.6 – 15.3	No		
Total Recoverable Lead	mg/kg dry wt	33.0 ± 5.0	29 – 38	No		
Total Recoverable Nickel	mg/kg dry wt	14.6 ± 2.3	11.6 – 17.1	No		
Total Recoverable Zinc	mg/kg dry wt	199 ± 15	171 – 230	No		

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10760.19				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.2 ± 2.0	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.400 ± 0.086	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	25.1 ± 4.1	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	21.7 ± 3.3	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	44.5 ± 6.7	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	6.7 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	105.0 ± 7.9	79 – 105	No

QC A7 dup 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10760.33				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.1 ± 2.2	9.4 – 13.9	No
Total Recoverable Lead	mg/kg dry wt	11.5 ± 1.8	10.0 – 14.8	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10760.55				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	9.8 ± 2.0	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.400 ± 0.086	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	23.7 ± 3.9	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	19.4 ± 3.0	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	42.6 ± 6.4	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	5.7 ± 1.5	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	94.1 ± 7.2	79 – 105	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10761.17				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.3 ± 2.2	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.88 ± 0.14	0.72 – 0.99	No
Total Recoverable Chromium	mg/kg dry wt	26.4 ± 4.3	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	14.2 ± 2.4	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	34.1 ± 5.2	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	14.5 ± 2.3	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	207 ± 15	171 – 230	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10761.19				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	9.2 ± 1.9	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.420 ± 0.088	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	23.4 ± 3.9	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	20.3 ± 3.1	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	46.3 ± 7.0	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	6.1 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	93.6 ± 7.1	79 – 105	No

QC A7 dup 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10761.24					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	10.9 ± 2.1	9.4 – 13.9	No	
Total Recoverable Lead	mg/kg dry wt	11.6 ± 1.8	10.0 – 14.8	No	

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10761.71				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	9.4 ± 2.0	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.452 ± 0.091	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	23.0 ± 3.8	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	18.6 ± 2.9	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	42.7 ± 6.4	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	5.9 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	87.1 ± 6.7	79 – 105	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10763.17					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	12.2 ± 2.3	9.3 – 12.9	No	
Total Recoverable Cadmium	mg/kg dry wt	0.95 ± 0.15	0.72 – 0.99	No	
Total Recoverable Chromium	mg/kg dry wt	28.0 ± 4.6	21 – 32	No	
Total Recoverable Copper	mg/kg dry wt	14.3 ± 2.4	11.6 – 15.3	No	
Total Recoverable Lead	mg/kg dry wt	35.4 ± 5.4	29 – 38	No	

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10763.17				
Results Control Limits Outside Limit (Yes/No)				
Total Recoverable Nickel	mg/kg dry wt	15.0 ± 2.4	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	210 ± 15	171 – 230	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10763.19				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	9.8 ± 2.0	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.410 ± 0.087	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	24.2 ± 4.0	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	19.9 ± 3.1	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	44.6 ± 6.7	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	6.3 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	93.4 ± 7.1	79 – 105	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10763.28				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.0 ± 2.0	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.374 ± 0.084	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	23.7 ± 3.9	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	20.2 ± 3.1	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	45.2 ± 6.8	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	6.6 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	97.6 ± 7.4	79 – 105	No

QC A7 dup 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10763.47				
Results Control Limits Outside Limit (Yes/No)				
Total Recoverable Arsenic	mg/kg dry wt	12.9 ± 2.4	9.4 – 13.9	No
Total Recoverable Lead	mg/kg dry wt	12.8 ± 2.0	10.0 – 14.8	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10763.79				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.5 ± 2.2	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.81 ± 0.13	0.72 – 0.99	No
Total Recoverable Chromium	mg/kg dry wt	27.4 ± 4.5	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.7 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	32.9 ± 5.0	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	15.3 ± 2.4	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	199 ± 15	171 – 230	No

QC A8 FG PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10763.81				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	9.0 ± 1.9	8.0 – 11.0	No
Total Recoverable Cadmium	mg/kg dry wt	0.395 ± 0.085	0.32 - 0.45	No
Total Recoverable Chromium	mg/kg dry wt	23.1 ± 3.9	15.5 – 27	No
Total Recoverable Copper	mg/kg dry wt	18.7 ± 2.9	17.0 – 22	No
Total Recoverable Lead	mg/kg dry wt	42.3 ± 6.4	39 – 51	No
Total Recoverable Nickel	mg/kg dry wt	5.9 ± 1.6	4.6 – 7.0	No
Total Recoverable Zinc	mg/kg dry wt	92.5 ± 7.1	79 – 105	No



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Quality Assurance Report

Page 1 of 5

QCPv1

Client: Contact: Aurecon New Zealand Limited

Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 Lab No: **Date Received: Date Reported:**

16-Aug-2024 21-Aug-2024

Quote No: 126272

Order No:

3651482

Client Reference: 521290-064 Tiana Hill Submitted By:

Sample Specific QCs					
Polycyclic Aromatic Hydrocarbons Screening in Soil					
		3651482.1	Control Limits	Outside Limit (Yes/No)	
1-methylnaphthalene-d10	%	102	65 – 130	No	
Benzo[a]pyrene-d12	%	114	70 – 140	No	
Fluoranthene-d10	%	110	66 – 130	No	

Polycyclic Aromatic Hydrocarbons Screening in Soil				
		3651482.2	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	106	65 – 130	No
Benzo[a]pyrene-d12	%	116	70 – 140	No
Fluoranthene-d10	%	113	66 – 130	No

Polycyclic Aromatic Hydrocarbons Screening in Soil				
		3651482.3	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	87	65 – 130	No
Benzo[a]pyrene-d12	%	103	70 – 140	No
Fluoranthene-d10	%	119	66 – 130	No

Polycyclic Aromatic Hydrocarbons Screening in Soil				
		3651482.6	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	107	65 – 130	No
Benzo[a]pyrene-d12	%	112	70 – 140	No
Fluoranthene-d10	%	110	66 – 130	No

Polycyclic Aromatic Hydrocarbons Screening in Soil				
		3651482.7	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	102	65 – 130	No
Benzo[a]pyrene-d12	%	110	70 – 140	No
Fluoranthene-d10	%	103	66 – 130	No

Blank QCs						
Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10866.16						
Results Control Limits Outside Limit (Yes/No)						
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No		
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No		
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No		
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No		
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No		
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No		
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No		

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10866.34					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No	
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.27	-0.40 – 0.40	No	
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No	

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10867.16					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No	
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No	
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No	

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10867.23					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No	
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No	
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No	

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16188.1					
		Results	Control Limits	Outside Limit (Yes/No)	
1-Methylnaphthalene	mg/kg dry wt	$< 0.010 \pm 0.032$	0.0 – 0.0100	No	
2-Methylnaphthalene	mg/kg dry wt	$< 0.010 \pm 0.032$	0.0 - 0.0100	No	
Acenaphthylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No	
Acenaphthene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 - 0.0100	No	
Anthracene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 – 0.0100	No	
Benzo[a]anthracene	mg/kg dry wt	< 0.010 ± 0.0062	0.0 - 0.0100	No	
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 - 0.0100	No	
Benzo[e]pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 - 0.0100	No	
Benzo[k]fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Chrysene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Fluorene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Naphthalene	mg/kg dry wt	< 0.05 ± 0.031	0.0 - 0.050	No	

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16188.1						
Results Control Limits Outside Limit (Yes/No)						
Perylene	mg/kg dry wt	$< 0.010 \pm 0.0066$	0.0 - 0.0100	No		
Phenanthrene	mg/kg dry wt	$< 0.010 \pm 0.0066$	0.0 – 0.0100	No		
Pyrene	mg/kg dry wt	$< 0.010 \pm 0.0066$	0.0 - 0.0100	No		

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16189.1					
		Results	Control Limits	Outside Limit (Yes/No)	
1-Methylnaphthalene	mg/kg dry wt	$< 0.010 \pm 0.032$	0.0 – 0.0100	No	
2-Methylnaphthalene	mg/kg dry wt	0.010 ± 0.032	0.0 - 0.0100	Yes #1	
Acenaphthylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Acenaphthene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 - 0.0100	No	
Anthracene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 - 0.0100	No	
Benzo[a]anthracene	mg/kg dry wt	< 0.010 ± 0.0062	0.0 - 0.0100	No	
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 – 0.0100	No	
Benzo[e]pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 - 0.0100	No	
Benzo[k]fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Chrysene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Fluorene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Naphthalene	mg/kg dry wt	< 0.05 ± 0.031	0.0 - 0.050	No	
Perylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Phenanthrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	

QC Spike QCs					
LCS TPH PrepWS xsSHOC - Tot	LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14208.3				
		Results	Control Limits	Outside Limit (Yes/No)	
Total hydrocarbons (C7 - C36)	%	97 ± 44	70 – 130	No	

LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14209.3				
Results Control Limits Outside Limit (Yes/No				
Total hydrocarbons (C7 - C36)	%	98 ± 44	70 – 130	No

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16188.2				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	99 ± 25	78 – 122	No
2-Methylnaphthalene	%	90 ± 22	72 – 117	No
Acenaphthylene	%	95.0 ± 8.6	75 – 118	No
Acenaphthene	%	106 ± 31	84 – 119	No
Anthracene	%	105 ± 32	79 – 121	No
Benzo[a]anthracene	%	103 ± 27	81 – 123	No
Benzo[a]pyrene (BAP)	%	105.0 ± 8.0	76 – 123	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	103 ± 22	80 – 121	No
Benzo[e]pyrene	%	92.0 ± 7.0	78 – 110	No
Benzo[g,h,i]perylene	%	101 ± 18	80 – 124	No
Benzo[k]fluoranthene	%	101 ± 13	79 – 121	No

		Results	Control Limits	Outside Limit (Yes/No)
Chrysene	%	106 ± 16	83 – 121	No
Dibenzo[a,h]anthracene	%	99 ± 13	78 – 124	No
Fluoranthene	%	112 ± 12	81 – 122	No
Fluorene	%	104 ± 13	86 – 122	No
Indeno(1,2,3-c,d)pyrene	%	98.0 ± 9.1	83 – 123	No
Naphthalene	%	102 ± 25	84 – 118	No
Perylene	%	92.0 ± 7.0	76 – 107	No
Phenanthrene	%	107 ± 15	84 – 120	No
Pyrene	%	101 ± 13	79 – 123	No

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16189.2				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	101 ± 25	78 – 122	No
2-Methylnaphthalene	%	96 ± 24	72 – 117	No
Acenaphthylene	%	107.0 ± 9.7	75 – 118	No
Acenaphthene	%	107 ± 31	84 – 119	No
Anthracene	%	105 ± 32	79 – 121	No
Benzo[a]anthracene	%	108 ± 29	81 – 123	No
Benzo[a]pyrene (BAP)	%	116.0 ± 8.9	76 – 123	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	122 ± 25	80 – 121	Yes #2
Benzo[e]pyrene	%	103.0 ± 7.9	78 – 110	No
Benzo[g,h,i]perylene	%	104 ± 18	80 – 124	No
Benzo[k]fluoranthene	%	121 ± 16	79 – 121	No
Chrysene	%	100 ± 15	83 – 121	No
Dibenzo[a,h]anthracene	%	100 ± 13	78 – 124	No
Fluoranthene	%	106 ± 11	81 – 122	No
Fluorene	%	110 ± 13	86 – 122	No
Indeno(1,2,3-c,d)pyrene	%	105.0 ± 9.7	83 – 123	No
Naphthalene	%	102 ± 25	84 – 118	No
Perylene	%	97.0 ± 7.4	76 – 107	No
Phenanthrene	%	103 ± 15	84 – 120	No
Pyrene	%	100 ± 13	79 – 123	No

Sample Spike QCs					
Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14209.30					
	Results	Control Limits	Outside Limit (Yes/No)		
Total hydrocarbons (C7 - C36)	% 96 ± 44	70 – 130	No		

Reference Material QCs						
SETOC-705 QC - WS: High	SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10866.17					
		Results	Control Limits	Outside Limit (Yes/No)		
Total Recoverable Arsenic	mg/kg dry wt	11.7 ± 2.2	9.3 – 12.9	No		
Total Recoverable Cadmium	mg/kg dry wt	0.87 ± 0.14	0.72 – 0.99	No		
Total Recoverable Chromium	mg/kg dry wt	26.0 ± 4.3	21 – 32	No		
Total Recoverable Copper	mg/kg dry wt	13.4 ± 2.3	11.6 – 15.3	No		
Total Recoverable Lead	mg/kg dry wt	33.3 ± 5.0	29 – 38	No		
Total Recoverable Nickel	mg/kg dry wt	14.1 ± 2.3	11.6 – 17.1	No		
Total Recoverable Zinc	mg/kg dry wt	200 ± 15	171 – 230	No		

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10866.24				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.6 ± 2.1	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.83 ± 0.14	0.72 – 0.99	No
Total Recoverable Chromium	mg/kg dry wt	24.6 ± 4.1	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	12.6 ± 2.2	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	32.7 ± 4.9	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	13.6 ± 2.2	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	189 ± 14	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10867.17				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.3 ± 2.2	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.88 ± 0.14	0.72 – 0.99	No
Total Recoverable Chromium	mg/kg dry wt	28.6 ± 4.7	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.8 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	34.9 ± 5.3	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	14.7 ± 2.3	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	209 ± 15	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10867.32				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	12.1 ± 2.3	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.89 ± 0.14	0.72 - 0.99	No
Total Recoverable Chromium	mg/kg dry wt	27.8 ± 4.5	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.4 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.5 ± 5.1	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	14.2 ± 2.3	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	201 ± 15	171 – 230	No

^{#1} The corresponding data was accepted as the blank level is at the Method Detection Limit (MDL).

^{#2} The Laboratory Control Spike (LCS) recovery for this analyte was over the acceptable recovery range of the method. The corresponding sample result was accepted because the rest of the targets in the LCS were within the expected ranges.



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Quality Assurance Report

Page 1 of 4

Client:

Aurecon New Zealand Limited

Andrew Allcock Contact:

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 Lab No: 3655466

22-Aug-2024 **Date Received: Date Reported:** 28-Aug-2024

Quote No: 126272 **Order No:** 126272 521290-064 (Amended)

QCPv2

Client Reference: Submitted By: Tiana Hill

Sample Specific QCs					
Polycyclic Aromatic Hydrocarbons Screening in Soil					
		3655466.1	Control Limits	Outside Limit (Yes/No)	
1-methylnaphthalene-d10	%	102	65 – 130	No	
Benzo[a]pyrene-d12	%	100	70 – 140	No	
Fluoranthene-d10	%	103	66 – 130	No	

Polycyclic Aromatic Hydrocarbons Screening in Soil				
		3655466.2	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	106	65 – 130	No
Benzo[a]pyrene-d12	%	107	70 – 140	No
Fluoranthene-d10	%	108	66 – 130	No

Polycyclic Aromatic Hydrocarbons Screening in Soil				
		3655466.3	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	108	65 – 130	No
Benzo[a]pyrene-d12	%	108	70 – 140	No
Fluoranthene-d10	%	109	66 – 130	No

Blank QCs					
Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10898.16					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Cadmium	mg/kg dry wt	$< 0.10 \pm 0.066$	-0.100 – 0.100	No	
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No	
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No	

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10898.36				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16210.1				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	mg/kg dry wt	$< 0.010 \pm 0.032$	0.0 – 0.0100	No
2-Methylnaphthalene	mg/kg dry wt	0.011 ± 0.032	0.0 – 0.0100	Yes #1
Acenaphthylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Acenaphthene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 – 0.0100	No
Anthracene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 – 0.0100	No
Benzo[a]anthracene	mg/kg dry wt	< 0.010 ± 0.0062	0.0 – 0.0100	No
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 – 0.0100	No
Benzo[e]pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 – 0.0100	No
Benzo[k]fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Chrysene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Fluorene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Naphthalene	mg/kg dry wt	< 0.05 ± 0.031	0.0 - 0.050	No
Perylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Phenanthrene	mg/kg dry wt	< 0.010 ± 0.0067	0.0 – 0.0100	No
Pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10902.16				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10902.31				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	$< 0.10 \pm 0.066$	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

QC Spike QCs				
LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14227.3				
		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	89 ± 43	70 – 130	No

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16210.2				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	102 ± 25	78 – 122	No
2-Methylnaphthalene	%	100 ± 25	72 – 117	No
Acenaphthylene	%	108.0 ± 9.8	75 – 118	No
Acenaphthene	%	107 ± 31	84 – 119	No
Anthracene	%	102 ± 31	79 – 121	No
Benzo[a]anthracene	%	100 ± 27	81 – 123	No
Benzo[a]pyrene (BAP)	%	81.0 ± 6.2	76 – 123	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	90 ± 19	80 – 121	No
Benzo[e]pyrene	%	92.0 ± 7.0	78 – 110	No
Benzo[g,h,i]perylene	%	95 ± 17	80 – 124	No
Benzo[k]fluoranthene	%	88 ± 12	79 – 121	No
Chrysene	%	95 ± 15	83 – 121	No
Dibenzo[a,h]anthracene	%	96 ± 13	78 – 124	No
Fluoranthene	%	113 ± 12	81 – 122	No
Fluorene	%	104 ± 13	86 – 122	No
Indeno(1,2,3-c,d)pyrene	%	96.0 ± 8.9	83 – 123	No
Naphthalene	%	103 ± 26	84 – 118	No
Perylene	%	81.0 ± 6.2	76 – 107	No
Phenanthrene	%	101 ± 15	84 – 120	No
Pyrene	%	106 ± 14	79 – 123	No

LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14229.3				
Results Control Limits Outside Limit (Yes/No)				
Total hydrocarbons (C7 - C36) %	94 ± 44	70 – 130	No	

Sample Spike QCs					
Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14227.18					
		Results	Control Limits	Outside Limit (Yes/No)	
Total hydrocarbons (C7 - C36)	%	92 ± 43	70 – 130	No	

Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14229.11					
Results Control Limits Outside Limit (Yes/No)					
Total hydrocarbons (C7 - C36) %	96 ± 44	70 – 130	No		

Reference Material QCs					
SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10898.17					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	12.3 ± 2.3	9.3 – 12.9	No	
Total Recoverable Cadmium	mg/kg dry wt	0.97 ± 0.15	0.72 - 0.99	No	
Total Recoverable Chromium	mg/kg dry wt	30.4 ± 4.9	21 – 32	No	
Total Recoverable Copper	mg/kg dry wt	15.5 ± 2.5	11.6 – 15.3	Yes #2	
Total Recoverable Lead	mg/kg dry wt	37.2 ± 5.6	29 – 38	No	
Total Recoverable Nickel	mg/kg dry wt	16.4 ± 2.5	11.6 – 17.1	No	
Total Recoverable Zinc	mg/kg dry wt	228 ± 17	171 – 230	No	

AGAL-12 QC PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10898.24					
Results Control Limits Outside Limit (Yes/No)					
Total Recoverable Arsenic	mg/kg dry wt	3.8 ± 1.5	3.1 – 4.2	No	
Total Recoverable Cadmium	mg/kg dry wt	0.78 ± 0.13	0.66 - 0.88	No	
Total Recoverable Chromium	mg/kg dry wt	32.4 ± 5.2	27 – 35	No	

AGAL-12 QC PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10898.24					
	Outside Limit (Yes/No)				
Total Recoverable Copper	mg/kg dry wt	160 ± 22	140 – 168	No	
Total Recoverable Lead	mg/kg dry wt	33.4 ± 5.0	29 – 36	No	
Total Recoverable Nickel	mg/kg dry wt	15.9 ± 2.5	13.3 – 17.3	No	
Total Recoverable Zinc	mg/kg dry wt	191 ± 14	165 – 200	No	

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10898.45				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.9 ± 2.1	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.86 ± 0.14	0.72 – 0.99	No
Total Recoverable Chromium	mg/kg dry wt	26.4 ± 4.3	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.3 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.6 ± 5.1	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	14.3 ± 2.3	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	199 ± 15	171 – 230	No

		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	12.0 ± 2.3	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.90 ± 0.15	0.72 - 0.99	No
Total Recoverable Chromium	mg/kg dry wt	27.5 ± 4.5	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.9 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	35.2 ± 5.3	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	15.1 ± 2.4	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	210 ± 15	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10902.38				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	12.1 ± 2.3	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.87 ± 0.14	0.72 – 0.99	No
Total Recoverable Chromium	mg/kg dry wt	27.9 ± 4.6	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.4 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	35.3 ± 5.3	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	14.3 ± 2.3	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	205 ± 15	171 – 230	No

Amended Report: This quality assurance report replaces report '3655466-QCPv1' issued on 28-Aug-2024 at 9:53 am. Reason for amendment: IDs updated.

 $^{^{\}sharp 1}$ The corresponding data was accepted as the blank level is at the Method Detection Limit (MDL).

^{#2} The recovery for this analyte was outside the acceptable recovery range of the method. The corresponding sample result was accepted because the related recovery in the other QC material analysed was within the expected range.



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Quality Assurance Report

Page 1 of 7

QCPv1

Client: Contact: Aurecon New Zealand Limited

ontact: Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 Lab No: Date Received: Date Reported:

28-Aug-2024 02-Sep-2024

Quote No: Order No:

126272

3658963

Client Reference: 521290-064
Submitted By: 521290-064

Sample Specific QCs

Polycyclic Aromatic Hydrocarbons Screening in Soil					
		3658963.1	Control Limits	Outside Limit (Yes/No)	
1-methylnaphthalene-d10	%	106	65 – 130	No	
Benzo[a]pyrene-d12	%	104	70 – 140	No	
Fluoranthene-d10	%	111	66 – 130	No	

Polycyclic Aromatic Hydrocarbons Screening in Soil					
		3658963.4	Control Limits	Outside Limit (Yes/No)	
1-methylnaphthalene-d10	%	99	65 – 130	No	
Benzo[a]pyrene-d12	%	100	70 – 140	No	
Fluoranthene-d10	%	94	66 – 130	No	

Blank QCs					
Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10921.16					
	Results Control Limits Outside Limit (Yes/No)				
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No	
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No	
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No	

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10921.42				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.27	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10922.16					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Cadmium	mg/kg dry wt	$< 0.10 \pm 0.066$	-0.100 – 0.100	No	
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	

Lab No: 3658963-QCPv1 Hill Labs Page 1 of 7

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10922.16					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Lead	mg/kg dry wt	$< 0.4 \pm 0.26$	-0.40 - 0.40	No	
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No	

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10922.39				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.27	-0.40 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

50x Manual Dilution Digest Blank PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10922.75				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	$< 0.10 \pm 0.066$	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10923.16				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10923.41				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.27	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

50x Manual Dilution Digest Blank PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10923.75				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No

50x Manual Dilution Digest Blank PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10923.75					
	Outside Limit (Yes/No)				
Total Recoverable Lead	mg/kg dry wt	$< 0.4 \pm 0.26$	-0.40 - 0.40	No	
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No	

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10924.16				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10924.38				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

50x Manual Dilution Digest Blank PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10924.53				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16225.1				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	mg/kg dry wt	$< 0.010 \pm 0.031$	0.0 - 0.0100	No
2-Methylnaphthalene	mg/kg dry wt	< 0.010 ± 0.032	0.0 - 0.0100	No
Acenaphthylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Acenaphthene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 - 0.0100	No
Anthracene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 - 0.0100	No
Benzo[a]anthracene	mg/kg dry wt	< 0.010 ± 0.0062	0.0 - 0.0100	No
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 - 0.0100	No
Benzo[e]pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 - 0.0100	No
Benzo[k]fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Chrysene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Lab No. 3659063 OCDv1		Hill Labe		Page 2 of 7

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16225.1				
		Results	Control Limits	Outside Limit (Yes/No)
Fluoranthene	mg/kg dry wt	$< 0.010 \pm 0.0066$	0.0 – 0.0100	No
Fluorene	mg/kg dry wt	$< 0.010 \pm 0.0066$	0.0 – 0.0100	No
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	$< 0.010 \pm 0.0066$	0.0 – 0.0100	No
Naphthalene	mg/kg dry wt	$< 0.05 \pm 0.032$	0.0 - 0.050	No
Perylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Phenanthrene	mg/kg dry wt	< 0.010 ± 0.0067	0.0 – 0.0100	No
Pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No

QC Spike QCs					
LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14235.3					
		Results	Control Limits	Outside Limit (Yes/No)	
Total hydrocarbons (C7 - C36)	%	84 ± 43	70 – 130	No	

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16225.2				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	99 ± 25	78 – 122	No
2-Methylnaphthalene	%	94 ± 23	72 – 117	No
Acenaphthylene	%	104.0 ± 9.4	75 – 118	No
Acenaphthene	%	106 ± 31	84 – 119	No
Anthracene	%	102 ± 31	79 – 121	No
Benzo[a]anthracene	%	112 ± 30	81 – 123	No
Benzo[a]pyrene (BAP)	%	106.0 ± 8.1	76 – 123	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	106 ± 22	80 – 121	No
Benzo[e]pyrene	%	93.0 ± 7.1	78 – 110	No
Benzo[g,h,i]perylene	%	101 ± 18	80 – 124	No
Benzo[k]fluoranthene	%	102 ± 13	79 – 121	No
Chrysene	%	105 ± 16	83 – 121	No
Dibenzo[a,h]anthracene	%	105 ± 14	78 – 124	No
Fluoranthene	%	97.0 ± 9.8	81 – 122	No
Fluorene	%	111 ± 14	86 – 122	No
Indeno(1,2,3-c,d)pyrene	%	103.0 ± 9.5	83 – 123	No
Naphthalene	%	101 ± 25	84 – 118	No
Perylene	%	93.0 ± 7.1	76 – 107	No
Phenanthrene	%	106 ± 15	84 – 120	No
Pyrene	%	108 ± 14	79 – 123	No

Sample Spike QCs					
Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14235.20					
		Results	Control Limits	Outside Limit (Yes/No)	
Total hydrocarbons (C7 - C36)	%	84 ± 43	70 – 130	No	

Reference Material QCs				
SETOC-705 QC - WS: High	Volume Enviro	onmental Soils by ICP-MS (F	HVesTR): 10921.17	
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.1 ± 2.2	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.87 ± 0.14	0.72 - 0.99	No
Total Recoverable Chromium	mg/kg dry wt	27.5 ± 4.5	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.7 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.0 ± 5.0	29 – 38	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10921.17					
Results Control Limits Outside Limit (Yes/No)					
Total Recoverable Nickel	mg/kg dry wt	15.3 ± 2.4	11.6 – 17.1	No	
Total Recoverable Zinc	mg/kg dry wt	205 ± 15	171 – 230	No	

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10921.53					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	11.4 ± 2.2	9.3 – 12.9	No	
Total Recoverable Cadmium	mg/kg dry wt	0.91 ± 0.15	0.72 - 0.99	No	
Total Recoverable Chromium	mg/kg dry wt	28.9 ± 4.7	21 – 32	No	
Total Recoverable Copper	mg/kg dry wt	14.1 ± 2.4	11.6 – 15.3	No	
Total Recoverable Lead	mg/kg dry wt	35.2 ± 5.3	29 – 38	No	
Total Recoverable Nickel	mg/kg dry wt	16.0 ± 2.5	11.6 – 17.1	No	
Total Recoverable Zinc	mg/kg dry wt	209 ± 15	171 – 230	No	

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10922.17				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	12.0 ± 2.3	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.86 ± 0.14	0.72 - 0.99	No
Total Recoverable Chromium	mg/kg dry wt	27.5 ± 4.5	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	14.0 ± 2.4	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	34.9 ± 5.3	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	14.7 ± 2.3	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	209 ± 15	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10922.53					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	11.9 ± 2.3	9.3 – 12.9	No	
Total Recoverable Cadmium	mg/kg dry wt	0.92 ± 0.15	0.72 – 0.99	No	
Total Recoverable Chromium	mg/kg dry wt	28.4 ± 4.6	21 – 32	No	
Total Recoverable Copper	mg/kg dry wt	14.9 ± 2.5	11.6 – 15.3	No	
Total Recoverable Lead	mg/kg dry wt	37.0 ± 5.6	29 – 38	No	
Total Recoverable Nickel	mg/kg dry wt	15.4 ± 2.4	11.6 – 17.1	No	
Total Recoverable Zinc	mg/kg dry wt	214 ± 16	171 – 230	No	

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10922.76				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.0 ± 2.1	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.87 ± 0.14	0.72 - 0.99	No
Total Recoverable Chromium	mg/kg dry wt	26.7 ± 4.4	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.3 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.6 ± 5.1	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	14.1 ± 2.3	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	194 ± 14	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10923.17					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	10.5 ± 2.1	9.3 – 12.9	No	
Total Recoverable Cadmium	mg/kg dry wt	0.81 ± 0.13	0.72 – 0.99	No	
Total Recoverable Chromium	mg/kg dry wt	27.0 ± 4.4	21 – 32	No	
Total Recoverable Copper	mg/kg dry wt	13.4 ± 2.3	11.6 – 15.3	No	
Total Recoverable Lead	mg/kg dry wt	33.1 ± 5.0	29 – 38	No	

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10923.17					
Results Control Limits Outside Limit (Yes/No)					
Total Recoverable Nickel	mg/kg dry wt	14.4 ± 2.3	11.6 – 17.1	No	
Total Recoverable Zinc	mg/kg dry wt	196 ± 15	171 – 230	No	

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10923.51				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.2 ± 2.2	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.84 ± 0.14	0.72 - 0.99	No
Total Recoverable Chromium	mg/kg dry wt	28.8 ± 4.7	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.5 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.1 ± 5.0	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	15.0 ± 2.4	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	201 ± 15	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10923.76				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.1 ± 2.0	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.79 ± 0.13	0.72 - 0.99	No
Total Recoverable Chromium	mg/kg dry wt	25.3 ± 4.2	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	12.8 ± 2.2	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	31.5 ± 4.8	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	12.9 ± 2.2	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	188 ± 14	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10924.17					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	11.3 ± 2.2	9.3 – 12.9	No	
Total Recoverable Cadmium	mg/kg dry wt	0.90 ± 0.14	0.72 – 0.99	No	
Total Recoverable Chromium	mg/kg dry wt	27.6 ± 4.5	21 – 32	No	
Total Recoverable Copper	mg/kg dry wt	14.4 ± 2.4	11.6 – 15.3	No	
Total Recoverable Lead	mg/kg dry wt	35.9 ± 5.4	29 – 38	No	
Total Recoverable Nickel	mg/kg dry wt	15.0 ± 2.4	11.6 – 17.1	No	
Total Recoverable Zinc	mg/kg dry wt	207 ± 15	171 – 230	No	

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10924.47				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.2 ± 2.2	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.85 ± 0.14	0.72 - 0.99	No
Total Recoverable Chromium	mg/kg dry wt	26.5 ± 4.3	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.8 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.6 ± 5.1	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	14.1 ± 2.3	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	203 ± 15	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10924.55					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	10.7 ± 2.1	9.3 – 12.9	No	
Total Recoverable Cadmium	mg/kg dry wt	0.80 ± 0.13	0.72 – 0.99	No	
Total Recoverable Chromium	mg/kg dry wt	26.2 ± 4.3	21 – 32	No	
Total Recoverable Copper	mg/kg dry wt	13.5 ± 2.3	11.6 – 15.3	No	
Total Recoverable Lead	mg/kg dry wt	32.6 ± 4.9	29 – 38	No	

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10924.55					
Results Control Limits Outside Limit (Yes/No)					
Total Recoverable Nickel	mg/kg dry wt	13.6 ± 2.2	11.6 – 17.1	No	
Total Recoverable Zinc	No				

 Lab No:
 3658963-QCPv1
 Hill Labs
 Page 7 of 7



6 0508 HILL LAB (44 555 22) **%** +64 7 858 2000 mail@hill-labs.co.nz www.hill-labs.co.nz

Quality Assurance Report

Page 1 of 3

QCPv1

Client: Contact: Aurecon New Zealand Limited

Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 Lab No: **Date Received: Date Reported:**

3664138 04-Sep-2024 09-Sep-2024

Quote No: 126272

Order No:

Client Reference: 521290-064 Submitted By: Tiana Hill

Sample Specific QCs Polycyclic Aromatic Hydrocarbons Screening in Soil					
1-methylnaphthalene-d10	%	100	65 – 130	No	
Benzo[a]pyrene-d12	%	99	70 – 140	No	
Fluoranthene-d10	%	102	66 – 130	No	

Blank QCs					
Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10958.16					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	$< 2 \pm 1.3$	-2.0 – 2.0	No	
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No	
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No	
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No	

Digest Blank 2 PrepWS esD		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

50x Manual Dilution Digest Blank PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10958.74				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Blank 1 PrepWS xsSHOC - \	NS: Polycyclic	: Aromatic Hydrocarbons So	il Analysis: 16246.1	
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	mg/kg dry wt	< 0.010 ± 0.032	0.0 – 0.0100	No
2-Methylnaphthalene	mg/kg dry wt	< 0.010 ± 0.032	0.0 - 0.0100	No
Acenaphthylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Acenaphthene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 - 0.0100	No
Anthracene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 - 0.0100	No
Benzo[a]anthracene	mg/kg dry wt	< 0.010 ± 0.0062	0.0 - 0.0100	No
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 - 0.0100	No
Benzo[e]pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 - 0.0100	No
Benzo[k]fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Chrysene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Fluorene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Naphthalene	mg/kg dry wt	< 0.05 ± 0.031	0.0 - 0.050	No
Perylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Phenanthrene	mg/kg dry wt	< 0.010 ± 0.0067	0.0 - 0.0100	No
Pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
				•

QC Spike QCs						
LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14251.4						
		Results	Control Limits	Outside Limit (Yes/No)		
Total hydrocarbons (C7 - C36)	%	84 ± 43	70 – 130	No		

ECS OCH ATTXSSTTOC - WS. I diyeyeli		LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16246.2				
		Results	Control Limits	Outside Limit (Yes/No)		
1-Methylnaphthalene	%	112 ± 28	78 – 122	No		
2-Methylnaphthalene	%	107 ± 27	72 – 117	No		
Acenaphthylene	%	112 ± 11	75 – 118	No		
Acenaphthene	%	112 ± 32	84 – 119	No		
Anthracene	%	113 ± 35	79 – 121	No		
Benzo[a]anthracene	%	109 ± 29	81 – 123	No		
Benzo[a]pyrene (BAP)	%	108.0 ± 8.3	76 – 123	No		
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	103 ± 22	80 – 121	No		
Benzo[e]pyrene	%	91.0 ± 7.0	78 – 110	No		
Benzo[g,h,i]perylene	%	102 ± 18	80 – 124	No		
Benzo[k]fluoranthene	%	101 ± 13	79 – 121	No		
Chrysene	%	107 ± 16	83 – 121	No		
Dibenzo[a,h]anthracene	%	108 ± 14	78 – 124	No		
Fluoranthene	%	109 ± 11	81 – 122	No		
Fluorene	%	112 ± 14	86 – 122	No		
Indeno(1,2,3-c,d)pyrene	%	107.0 ± 9.9	83 – 123	No		
Naphthalene	%	110 ± 27	84 – 118	No		
Perylene	%	96.0 ± 7.3	76 – 107	No		

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16246.2					
Results Control Limits Outside Limit (Yes/No)					
Phenanthrene %	109 ± 16	84 – 120	No		
Pyrene %	103 ± 14	79 – 123	No		

Sample Spike QCs						
Matrix Spike TPH PrepWS xsSHC	Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14251.27					
		Results	Control Limits	Outside Limit (Yes/No)		
Total hydrocarbons (C7 - C36)	%	82 ± 42	70 – 130	No		

Reference Material QCs						
SETOC-705 QC - WS: High	SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10958.17					
		Results	Control Limits	Outside Limit (Yes/No)		
Total Recoverable Arsenic	mg/kg dry wt	11.1 ± 2.2	9.3 – 12.9	No		
Total Recoverable Cadmium	mg/kg dry wt	0.85 ± 0.14	0.72 – 0.99	No		
Total Recoverable Chromium	mg/kg dry wt	26.2 ± 4.3	21 – 32	No		
Total Recoverable Copper	mg/kg dry wt	13.2 ± 2.3	11.6 – 15.3	No		
Total Recoverable Lead	mg/kg dry wt	33.8 ± 5.1	29 – 38	No		
Total Recoverable Nickel	mg/kg dry wt	14.3 ± 2.3	11.6 – 17.1	No		
Total Recoverable Zinc	mg/kg dry wt	197 ± 15	171 – 230	No		

		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.5 ± 2.1	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.82 ± 0.14	0.72 - 0.99	No
Total Recoverable Chromium	mg/kg dry wt	24.9 ± 4.1	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	12.4 ± 2.2	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	32.3 ± 4.9	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	13.4 ± 2.2	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	188 ± 14	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10958.75					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	10.1 ± 2.0	9.3 – 12.9	No	
Total Recoverable Cadmium	mg/kg dry wt	0.78 ± 0.13	0.72 – 0.99	No	
Total Recoverable Chromium	mg/kg dry wt	24.0 ± 4.0	21 – 32	No	
Total Recoverable Copper	mg/kg dry wt	12.3 ± 2.2	11.6 – 15.3	No	
Total Recoverable Lead	mg/kg dry wt	30.6 ± 4.6	29 – 38	No	
Total Recoverable Nickel	mg/kg dry wt	12.7 ± 2.1	11.6 – 17.1	No	
Total Recoverable Zinc	mg/kg dry wt	183 ± 14	171 – 230	No	

Lab No: 3664138-QCPv1 Hill Labs Page 3 of 3



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Quality Assurance Report

Page 1 of 5

QCPv1

Client: Contact: Aurecon New Zealand Limited

Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 Lab No: 3670643 **Date Received: Date Reported:**

12-Sep-2024 16-Sep-2024

Quote No: 126272 **Order No:**

Client Reference: 521290-064 Submitted By:

Tiana Hill

Sample Specific QCs					
Polycyclic Aromatic Hydrocarbons Screening in Soil					
		3670643.1	Control Limits	Outside Limit (Yes/No)	
1-methylnaphthalene-d10	%	110	65 – 130	No	
Benzo[a]pyrene-d12	%	100	70 – 140	No	
Fluoranthene-d10	%	107	66 – 130	No	

Blank QCs					
Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10996.16					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Cadmium	mg/kg dry wt	$< 0.10 \pm 0.066$	-0.100 - 0.100	No	
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No	
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No	

		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.27	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10997.16				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10997.30				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	$< 0.4 \pm 0.26$	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16267.1					
		Results	Control Limits	Outside Limit (Yes/No)	
1-Methylnaphthalene	mg/kg dry wt	$< 0.010 \pm 0.031$	0.0 – 0.0100	No	
2-Methylnaphthalene	mg/kg dry wt	< 0.010 ± 0.031	0.0 - 0.0100	No	
Acenaphthylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No	
Acenaphthene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 - 0.0100	No	
Anthracene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 - 0.0100	No	
Benzo[a]anthracene	mg/kg dry wt	< 0.010 ± 0.0062	0.0 - 0.0100	No	
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 – 0.0100	No	
Benzo[e]pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No	
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 - 0.0100	No	
Benzo[k]fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Chrysene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Fluorene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Naphthalene	mg/kg dry wt	< 0.05 ± 0.031	0.0 - 0.050	No	
Perylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Phenanthrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	
Pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No	

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16267.2				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	mg/kg dry wt	< 0.10 ± 0.031	0.0 - 0.0100	No
2-Methylnaphthalene	mg/kg dry wt	< 0.10 ± 0.032	0.0 - 0.0100	Yes #1
Acenaphthylene	mg/kg dry wt	< 0.10 ± 0.0066	0.0 - 0.0100	No
Acenaphthene	mg/kg dry wt	< 0.10 ± 0.0060	0.0 - 0.0100	No

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16267.2				
		Results	Control Limits	Outside Limit (Yes/No)
Anthracene	mg/kg dry wt	$< 0.10 \pm 0.0060$	0.0 - 0.0100	No
Benzo[a]anthracene	mg/kg dry wt	< 0.10 ± 0.0062	0.0 - 0.0100	No
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.10 ± 0.0066	0.0 – 0.0100	No
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.10 ± 0.0064	0.0 – 0.0100	No
Benzo[e]pyrene	mg/kg dry wt	< 0.10 ± 0.0066	0.0 - 0.0100	No
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.10 ± 0.0064	0.0 - 0.0100	No
Benzo[k]fluoranthene	mg/kg dry wt	< 0.10 ± 0.0066	0.0 - 0.0100	No
Chrysene	mg/kg dry wt	< 0.10 ± 0.0066	0.0 - 0.0100	No
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.10 ± 0.0066	0.0 – 0.0100	No
Fluoranthene	mg/kg dry wt	< 0.10 ± 0.0066	0.0 - 0.0100	No
Fluorene	mg/kg dry wt	< 0.10 ± 0.0066	0.0 - 0.0100	No
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.10 ± 0.0066	0.0 - 0.0100	No
Naphthalene	mg/kg dry wt	< 0.5 ± 0.031	0.0 - 0.050	No
Perylene	mg/kg dry wt	< 0.10 ± 0.0066	0.0 - 0.0100	No
Phenanthrene	mg/kg dry wt	< 0.10 ± 0.0066	0.0 - 0.0100	No
Pyrene	mg/kg dry wt	< 0.10 ± 0.0066	0.0 - 0.0100	No

QC Spike QCs				
LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14268.3				
		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	93 ± 43	70 – 130	No

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16267.3				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	107 ± 27	78 – 122	No
2-Methylnaphthalene	%	97 ± 24	72 – 117	No
Acenaphthylene	%	103.0 ± 9.3	75 – 118	No
Acenaphthene	%	108 ± 31	84 – 119	No
Anthracene	%	95 ± 29	79 – 121	No
Benzo[a]anthracene	%	94 ± 25	81 – 123	No
Benzo[a]pyrene (BAP)	%	116.0 ± 8.9	76 – 123	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	113 ± 24	80 – 121	No
Benzo[e]pyrene	%	110.0 ± 8.4	78 – 110	No
Benzo[g,h,i]perylene	%	112 ± 20	80 – 124	No
Benzo[k]fluoranthene	%	121 ± 16	79 – 121	No
Chrysene	%	110 ± 17	83 – 121	No
Dibenzo[a,h]anthracene	%	122 ± 16	78 – 124	No
Fluoranthene	%	100 ± 11	81 – 122	No
Fluorene	%	109 ± 13	86 – 122	No
Indeno(1,2,3-c,d)pyrene	%	109 ± 11	83 – 123	No
Naphthalene	%	103 ± 26	84 – 118	No
Perylene	%	106.0 ± 8.1	76 – 107	No
Phenanthrene	%	108 ± 16	84 – 120	No
Pyrene	%	102 ± 14	79 – 123	No

Sample Spike QCs						
Matrix Spike TPH PrepWS xsSH	Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14268.26					
		Results	Control Limits	Outside Limit (Yes/No)		
Total hydrocarbons (C7 - C36)	%	86 ± 43	70 – 130	No		

Reference Material QCs						
SETOC-705 QC - WS: High	SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10996.17					
Results Control Limits Outside Limit (Yes/No)						
Total Recoverable Arsenic	mg/kg dry wt	11.6 ± 2.2	9.3 – 12.9	No		
Total Recoverable Cadmium	mg/kg dry wt	0.88 ± 0.14	0.72 - 0.99	No		
Total Recoverable Chromium	mg/kg dry wt	26.3 ± 4.3	21 – 32	No		
Total Recoverable Copper	mg/kg dry wt	13.7 ± 2.3	11.6 – 15.3	No		
Total Recoverable Lead	mg/kg dry wt	35.1 ± 5.3	29 – 38	No		
Total Recoverable Nickel	mg/kg dry wt	14.3 ± 2.3	11.6 – 17.1	No		
Total Recoverable Zinc	mg/kg dry wt	203 ± 15	171 – 230	No		

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10996.48				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.6 ± 2.2	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.91 ± 0.15	0.72 – 0.99	No
Total Recoverable Chromium	mg/kg dry wt	27.8 ± 4.5	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.6 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	35.9 ± 5.4	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	15.0 ± 2.4	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	204 ± 15	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10996.81				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.5 ± 2.1	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.80 ± 0.13	0.72 - 0.99	No
Total Recoverable Chromium	mg/kg dry wt	25.0 ± 4.1	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	12.7 ± 2.2	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	31.1 ± 4.7	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	13.4 ± 2.2	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	189 ± 14	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10997.17					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	11.9 ± 2.2	9.3 – 12.9	No	
Total Recoverable Cadmium	mg/kg dry wt	0.90 ± 0.15	0.72 – 0.99	No	
Total Recoverable Chromium	mg/kg dry wt	26.4 ± 4.3	21 – 32	No	
Total Recoverable Copper	mg/kg dry wt	13.8 ± 2.3	11.6 – 15.3	No	
Total Recoverable Lead	mg/kg dry wt	34.8 ± 5.2	29 – 38	No	
Total Recoverable Nickel	mg/kg dry wt	14.2 ± 2.3	11.6 – 17.1	No	
Total Recoverable Zinc	mg/kg dry wt	206 ± 15	171 – 230	No	

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10997.43				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	12.2 ± 2.3	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.91 ± 0.15	0.72 - 0.99	No
Total Recoverable Chromium	mg/kg dry wt	26.6 ± 4.4	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	14.4 ± 2.4	11.6 – 15.3	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 10997.43					
Results Control Limits Outside Limit (Yes/No)					
Total Recoverable Lead	mg/kg dry wt	35.4 ± 5.4	29 – 38	No	
Total Recoverable Nickel	mg/kg dry wt	14.8 ± 2.3	11.6 – 17.1	No	
Total Recoverable Zinc	mg/kg dry wt	217 ± 16	171 – 230	No	

Analyst's Comments

#1 False alert. Result is less than detection limit.



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Quality Assurance Report

Page 1 of 3

QCPv1

Client: Contact: Aurecon New Zealand Limited

Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 Lab No: 3674838 **Date Received:**

18-Sep-2024

Date Reported: Quote No:

23-Sep-2024

Order No:

126272

Client Reference: 521290-64 Submitted By: Tiana Hill

Sample Specific QCs				
BTEX in Soil by Headspace GC-MS				
		3674838.1	Control Limits	Outside Limit (Yes/No)
Benzene-d6	%	114	72 – 140	No

SMC Compounds in SVOC Soil Samples by GC-MS				
		3674838.1	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	90	40 – 120	No
2-fluorophenol	%	85	40 – 120	No
Nitrobenzene-d5	%	89	40 – 120	No
Phenol-d5	%	72	40 – 120	No
Terphenyl-d14	%	99	40 – 120	No
2,4,6-Tribromophenol	%	77	40 – 120	No

BTEX in Soil by Headspace GC-MS				
		3674838.2	Control Limits	Outside Limit (Yes/No)
Benzene-d6	%	119	72 – 140	No

Polycyclic Aromatic Hydrocarbons Screening in Soil				
		3674838.2	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	100	65 – 130	No
Benzo[a]pyrene-d12	%	103	70 – 140	No
Fluoranthene-d10	%	98	66 – 130	No

Blank QCs blank PrepWS xsMeBTEX PrepWS apHSV - BTEX by Headspace Soil Analysis: 6533.2 Results **Control Limits** Outside Limit (Yes/No) Benzene $< 0.05 \pm 0.024$ 0.0 - 0.033mg/kg dry wt No Toluene $< 0.05 \pm 0.023$ 0.0 - 0.033mg/kg dry wt No Ethylbenzene mg/kg dry wt $< 0.05 \pm 0.014$ 0.0 - 0.033No m&p-Xylene No mg/kg dry wt $< 0.10 \pm 0.037$ 0.0 - 0.067o-Xylene $< 0.05 \pm 0.026$ 0.0 - 0.033mg/kg dry wt No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11023.16				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No

3674838-QCPv1 Hill Labs Lab No: Page 1 of 3

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11023.16				
Results Control Limits Outside Limit (Yes				Outside Limit (Yes/No)
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11023.33				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.27	-0.40 – 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16290.1				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	mg/kg dry wt	$< 0.010 \pm 0.032$	0.0 – 0.0100	No
2-Methylnaphthalene	mg/kg dry wt	< 0.010 ± 0.032	0.0 – 0.0100	No
Acenaphthylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Acenaphthene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 - 0.0100	No
Anthracene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 - 0.0100	No
Benzo[a]anthracene	mg/kg dry wt	< 0.010 ± 0.0062	0.0 - 0.0100	No
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 - 0.0100	No
Benzo[e]pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Benzo[g,h,i]perylene	mg/kg dry wt	< 0.010 ± 0.0064	0.0 - 0.0100	No
Benzo[k]fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Chrysene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Fluorene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Naphthalene	mg/kg dry wt	< 0.05 ± 0.032	0.0 - 0.050	No
Perylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Phenanthrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No

QC Spike QCs LCS PrepWS xsMeBTEX PrepWS apHSV - BTEX by Headspace Soil Analysis: 6533.3				
Benzene	%	93.0 ± 8.6	87 – 111	No
Toluene	%	96.0 ± 7.2	89 – 110	No
Ethylbenzene	%	97.0 ± 7.4	95 – 113	No
m&p-Xylene	%	96.0 ± 8.5	87 – 114	No
o-Xvlene	%	98.0 ± 7.7	88 – 114	No

LCS TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14281.3				
Results Control Limits Outside Limit (Yes/No)				
Total hydrocarbons (C7 - C36)	89 ± 43	70 – 130	No	

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16290.2				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	109 ± 27	78 – 122	No
2-Methylnaphthalene	%	109 ± 27	72 – 117	No
Acenaphthylene	%	111 ± 10	75 – 118	No
Acenaphthene	%	109 ± 31	84 – 119	No
Anthracene	%	107 ± 33	79 – 121	No
Benzo[a]anthracene	%	110 ± 29	81 – 123	No
Benzo[a]pyrene (BAP)	%	102.0 ± 7.8	76 – 123	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	100 ± 21	80 – 121	No
Benzo[e]pyrene	%	86.0 ± 6.6	78 – 110	No
Benzo[g,h,i]perylene	%	105 ± 19	80 – 124	No
Benzo[k]fluoranthene	%	94 ± 12	79 – 121	No
Chrysene	%	103 ± 16	83 – 121	No
Dibenzo[a,h]anthracene	%	104 ± 14	78 – 124	No
Fluoranthene	%	107 ± 11	81 – 122	No
Fluorene	%	106 ± 13	86 – 122	No
Indeno(1,2,3-c,d)pyrene	%	106.0 ± 9.8	83 – 123	No
Naphthalene	%	106 ± 26	84 – 118	No
Perylene	%	89.0 ± 6.8	76 – 107	No
Phenanthrene	%	109 ± 16	84 – 120	No
Pyrene	%	118 ± 16	79 – 123	No

Sample Spike QCs				
Matrix Spike TPH PrepWS xsSHC	C - Total	Petroleum Hydrocarbon So	il Analysis: 14281.23	
		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	86 ± 43	70 – 130	No

Reference Material QCs				
SETOC-705 QC - WS: High	Volume Environ	nmental Soils by ICP-MS (HVesTR): 11023.17	
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	11.4 ± 2.2	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.82 ± 0.14	0.72 - 0.99	No
Total Recoverable Chromium	mg/kg dry wt	27.1 ± 4.5	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.5 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.9 ± 5.1	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	14.3 ± 2.3	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	198 ± 15	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11023.48				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	12.2 ± 2.3	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.82 ± 0.14	0.72 – 0.99	No
Total Recoverable Chromium	mg/kg dry wt	29.5 ± 4.8	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	14.0 ± 2.4	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	34.5 ± 5.2	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	15.2 ± 2.4	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	198 ± 15	171 – 230	No



6 0508 HILL LAB (44 555 22) **%** +64 7 858 2000 mail@hill-labs.co.nz www.hill-labs.co.nz

Quality Assurance Report

Page 1 of 8

QCPv1

Client: Contact: Aurecon New Zealand Limited

Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 Lab No: **Date Received: Date Reported:**

26-Sep-2024 04-Oct-2024

Quote No: Order No:

Submitted By:

126272

3680726

Client Reference: 521290-064 Tiana Hill

Sample Specific QCs					
Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq					
		3680726.1	Control Limits	Outside Limit (Yes/No)	
1-methylnaphthalene-d10	%	113	40 – 130	No	
Benzo[a]pyrene-d12	%	120	40 – 130	No	
Fluoranthene-d10	%	110	40 – 130	No	

Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq				
		3680726.2	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	105	40 – 130	No
Benzo[a]pyrene-d12	%	119	40 – 130	No
Fluoranthene-d10	%	111	40 – 130	No

SMC Compounds in SVOC Water Samples by GC-MS				
		3680726.2	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	74	40 – 120	No
2-fluorophenol	%	67	40 – 120	No
Nitrobenzene-d5	%	75	40 – 120	No
Phenol-d5	%	63	40 – 120	No
Terphenyl-d14	%	44	40 – 120	No
2,4,6-Tribromophenol	%	70	40 – 120	No

Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq				
		3680726.4	Control Limits	Outside Limit (Yes/No)
1-methylnaphthalene-d10	%	111	40 – 130	No
Benzo[a]pyrene-d12	%	120	40 – 130	No
Fluoranthene-d10	%	110	40 – 130	No

SMC Compounds in SVOC Water Samples by GC-MS				
		3680726.4	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	76	40 – 120	No
2-fluorophenol	%	68	40 – 120	No
Nitrobenzene-d5	%	78	40 – 120	No
Phenol-d5	%	67	40 – 120	No
Terphenyl-d14	%	37	40 – 120	Yes
2,4,6-Tribromophenol	%	70	40 – 120	No

Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq				
	3680726.5	Control Limits	Outside Limit (Yes/No)	
1-methylnaphthalene-d10	6 112	40 – 130	No	
Benzo[a]pyrene-d12	6 120	40 – 130	No	

Polycyclic Aromatic Hydrocarbons Screening in Water, By Liq/Liq				
		3680726.5	Control Limits	Outside Limit (Yes/No)
Fluoranthene-d10	%	109	40 – 130	No

SMC Compounds in SVOC Water Samples by GC-MS				
		3680726.5	Control Limits	Outside Limit (Yes/No)
2-fluorobiphenyl	%	76	40 – 120	No
2-fluorophenol	%	66	40 – 120	No
Nitrobenzene-d5	%	74	40 – 120	No
Phenol-d5	%	65	40 – 120	No
Terphenyl-d14	%	48	40 – 120	No
2,4,6-Tribromophenol	%	69	40 – 120	No

Blank QCs				
FBlank PrepWS DissPrep 1 - WS: Environmental Waters by ICP-MS (EW): 21338.22				
		Results	Control Limits	Outside Limit (Yes/No)
Dissolved Arsenic	g/m³	$< 0.0010 \pm 0.00067$	-0.00100 — 0.00100	No
Dissolved Cadmium	g/m³	< 0.00005 ± 0.000033	-0.000050 - 0.000050	No
Dissolved Chromium	g/m³	< 0.0005 ± 0.00034	-0.00050 - 0.00050	No
Dissolved Copper	g/m³	< 0.0005 ± 0.00034	-0.00050 - 0.00050	No
Dissolved Lead	g/m³	< 0.00010 ± 0.000067	-0.000100 – 0.000100	No
Dissolved Nickel	g/m³	< 0.0005 ± 0.00034	-0.00050 - 0.00050	No
Dissolved Zinc	g/m ³	< 0.0010 ± 0.00067	-0.00100 - 0.00100	No

FBlank PrepWS DissPrep 2 - WS: Environmental Waters by ICP-MS (EW): 21338.23				
		Results	Control Limits	Outside Limit (Yes/No)
Dissolved Arsenic	g/m³	$< 0.0010 \pm 0.00067$	-0.00100 - 0.00100	No
Dissolved Cadmium	g/m³	< 0.00005 ± 0.000033	-0.000050 - 0.000050	No
Dissolved Chromium	g/m³	< 0.0005 ± 0.00034	-0.00050 - 0.00050	No
Dissolved Copper	g/m³	< 0.0005 ± 0.00034	-0.00050 - 0.00050	No
Dissolved Lead	g/m ³	< 0.00010 ± 0.000067	-0.000100 - 0.000100	No
Dissolved Nickel	g/m³	< 0.0005 ± 0.00034	-0.00050 - 0.00050	No
Dissolved Zinc	g/m³	< 0.0010 ± 0.00067	-0.00100 – 0.00100	No

ARBlank PrepWS DissPrep 1 - WS: Environmental Waters by ICP-MS (EW): 21338.24				
	Results	Control Limits	Outside Limit (Yes/No)	
Dissolved Arsenic g/m ³	< 0.0010 ± 0.00067	-0.00100 – 0.00100	No	
Dissolved Cadmium g/m ³	< 0.00005 ± 0.000033	-0.000050 – 0.000050	No	
Dissolved Chromium g/m ³	< 0.0005 ± 0.00034	-0.00050 – 0.00050	No	
Dissolved Copper g/m ³	< 0.0005 ± 0.00034	-0.00050 - 0.00050	No	
Dissolved Lead g/m ³	< 0.00010 ± 0.000067	-0.000100 – 0.000100	No	
Dissolved Nickel g/m ³	< 0.0005 ± 0.00034	-0.00050 - 0.00050	No	
Dissolved Zinc g/m ³	< 0.0010 ± 0.00067	-0.00100 – 0.00100	No	

ARBlank PrepWS DissPrep 2 - WS: Environmental Waters by ICP-MS (EW): 21338.25				
		Results	Control Limits	Outside Limit (Yes/No)
Dissolved Arsenic	g/m³	$< 0.0010 \pm 0.00067$	-0.00100 – 0.00100	No
Dissolved Cadmium	g/m³	< 0.00005 ± 0.000033	-0.000050 - 0.000050	No
Dissolved Chromium	g/m³	< 0.0005 ± 0.00034	-0.00050 - 0.00050	No
Dissolved Copper	g/m ³	< 0.0005 ± 0.00034	-0.00050 - 0.00050	No
Dissolved Lead	g/m³	< 0.00010 ± 0.000067	-0.000100 – 0.000100	No
Dissolved Nickel	g/m³	< 0.0005 ± 0.00034	-0.00050 - 0.00050	No

ARBlank PrepWS DissPrep 2 - WS: Environmental Waters by ICP-MS (EW): 21338.25				
Results Control Limits Outside Limit (Yes/No)				
Dissolved Zinc g/m ³	< 0.0010 ± 0.00067	-0.00100 – 0.00100	No	

Blank PrepWS xwTPH - WS: Total Petroleum Hydrocarbons Water Analysis: 8575.2				
	Results	Control Limits	Outside Limit (Yes/No)	
C7 - C9 g/m ³	< 0.10 ± 0.060	0.0 - 0.075	No	
C10 - C11 g/m ³	< 0.10 ± 0.060	0.0 - 0.100	No	
C12 - C14 g/m ³	< 0.10 ± 0.060	0.0 - 0.100	No	
C15 - C20 g/m ³	< 0.10 ± 0.060	0.0 - 0.100	No	
C21 - C25 g/m ³	< 0.10 ± 0.060	0.0 - 0.100	No	
C26 - C29 g/m ³	< 0.10 ± 0.060	0.0 - 0.100	No	
C30 - C36 g/m ³	< 0.10	0.0 - 0.100	No	

Blank PrepWS xwTPH - WS: Total Petroleum Hydrocarbons Water Analysis: 8575.20				
		Results	Control Limits	Outside Limit (Yes/No)
C7 - C9	g/m³	$< 0.10 \pm 0.060$	0.0 - 0.075	No
C10 - C11	g/m³	< 0.10 ± 0.060	0.0 - 0.100	No
C12 - C14	g/m³	< 0.10 ± 0.060	0.0 - 0.100	No
C15 - C20	g/m³	< 0.10 ± 0.060	0.0 - 0.100	No
C21 - C25	g/m³	$< 0.10 \pm 0.060$	0.0 - 0.100	No
C26 - C29	g/m³	< 0.10 ± 0.060	0.0 - 0.100	No
C30 - C36	g/m³	< 0.10	0.0 - 0.100	No

Blank 2 PrepWS xwTPH - WS: Total Petroleum Hydrocarbons Water Analysis: 8575.26				
		Results	Control Limits	Outside Limit (Yes/No)
C7 - C9	g/m³	< 0.10 ± 0.061	0.0 - 0.075	No
C10 - C11	g/m³	< 0.10 ± 0.060	0.0 - 0.100	No
C12 - C14	g/m³	< 0.10 ± 0.060	0.0 - 0.100	No
C15 - C20	g/m ³	< 0.10 ± 0.060	0.0 - 0.100	No
C21 - C25	g/m ³	< 0.10 ± 0.061	0.0 - 0.100	No
C26 - C29	g/m³	< 0.10 ± 0.060	0.0 - 0.100	No
C30 - C36	g/m³	< 0.10	0.0 - 0.100	No

blank PrepWS xwSVasc - Semivolatile Water Analysis: 4898.1				
		Results	Control Limits	Outside Limit (Yes/No)
Acenaphthene	g/m³	< 0.003 ± 0.0017	0.0 - 0.000125	No
Acenaphthylene	g/m³	< 0.003 ± 0.0017	0.0 - 0.000125	No
Aldrin	g/m³	< 0.005 ± 0.0029	0.0 - 0.00025	No
Anthracene	g/m³	< 0.003 ± 0.0017	0.0 - 0.000125	No
Benzo[a]anthracene	g/m³	< 0.003 ± 0.0017	0.0 - 0.000125	No
Benzo[a]pyrene (BAP)	g/m³	< 0.003 ± 0.00092	0.0 - 0.00025	No
Benzo[b]fluoranthene + Benzo[j]fluoranth	ene g/m³	< 0.003 ± 0.0013	0.0 - 0.00025	No
Benzo[g,h,i]perylene	g/m³	< 0.003 ± 0.00099	0.0 - 0.00025	No
Benzo[k]fluoranthene	g/m³	< 0.003 ± 0.0012	0.0 - 0.00025	No
Benzyl alcohol	g/m³	< 0.05 ± 0.017	0.0 - 0.0025	No
alpha-BHC	g/m³	$< 0.005 \pm 0.0030$	0.0 - 0.00025	No
beta-BHC	g/m³	< 0.005 ± 0.0031	0.0 - 0.00025	No
delta-BHC	g/m³	< 0.005 ± 0.0030	0.0 - 0.00025	No
gamma-BHC (Lindane)	g/m³	< 0.005 ± 0.0030	0.0 - 0.00025	No
Bis(2-chloroethoxy) methane	g/m³	< 0.005 ± 0.0025	0.0 - 0.00025	No

blank PrepWS xwSVasc - Sen	nivolatile Wate	r Analysis: 4898.1		
		Results	Control Limits	Outside Limit (Yes/No)
Bis(2-chloroethyl)ether	g/m³	< 0.005 ± 0.0025	0.0 - 0.00025	No
Bis(2-chloroisopropyl)ether	g/m³	< 0.005 ± 0.0027	0.0 - 0.00025	No
Bis(2-ethylhexyl)phthalate	g/m³	< 0.03 ± 0.015	0.0 - 0.00100	No
4-Bromophenyl phenyl ether	g/m³	< 0.005 ± 0.0027	0.0 - 0.00025	No
Butylbenzylphthalate	g/m³	< 0.010 ± 0.0054	0.0 - 0.00050	No
Carbazole	g/m³	$< 0.005 \pm 0.0029$	0.0 - 0.00025	No
4-Chloro-3-methylphenol	g/m³	< 0.010 ± 0.0056	0.0 - 0.00050	No
1&2-Chloronaphthalene	g/m³	< 0.003 ± 0.00088	0.0 - 0.00050	No
2-Chlorophenol	g/m³	< 0.005 ± 0.0028	0.0 - 0.00025	No
4-Chlorophenyl phenyl ether	g/m³	< 0.005 ± 0.0029	0.0 - 0.00025	No
Chrysene	g/m³	< 0.003 ± 0.0017	0.0 - 0.000125	No
4,4'-DDD	g/m³	< 0.005 ± 0.0025	0.0 - 0.00025	No
4,4'-DDE	g/m³	< 0.005 ± 0.0027	0.0 - 0.00025	No
4,4'-DDT	g/m³	< 0.010 ± 0.0048	0.0 - 0.00050	No
Di(2-ethylhexyl)adipate	g/m³	< 0.005 ± 0.0030	0.0 - 0.00025	No
Dibenzo[a,h]anthracene	g/m³	< 0.003 ± 0.0012	0.0 - 0.00025	No
Dibenzofuran	g/m³	< 0.005 ± 0.0029	0.0 - 0.00025	No
1,2-Dichlorobenzene	g/m³	< 0.010 ± 0.0054	0.0 - 0.00050	No
1,3-Dichlorobenzene	g/m³	< 0.010 ± 0.0052	0.0 - 0.00050	No
1,4-Dichlorobenzene	g/m³	< 0.010 ± 0.0046	0.0 - 0.00050	No
2,4-Dichlorophenol	g/m³	< 0.005 ± 0.0028	0.0 - 0.00025	No
Dieldrin	g/m³	< 0.005 ± 0.0027	0.0 - 0.00025	No
Diethylphthalate	g/m³	< 0.010 ± 0.0053	0.0 - 0.00050	No
2,4-Dimethylphenol	g/m³	< 0.005 ± 0.0014	0.0 - 0.00025	No
Dimethylphthalate	g/m³	< 0.010 ± 0.0055	0.0 - 0.00050	No
Di-n-butylphthalate	g/m³	< 0.010 ± 0.0056	0.0 - 0.00100	No
2,4-Dinitrotoluene	g/m³	< 0.010 ± 0.0057	0.0 - 0.00050	No
2,6-Dinitrotoluene	g/m³	< 0.010 ± 0.0055	0.0 - 0.00050	No
Di-n-octylphthalate	g/m³	< 0.010 ± 0.0031	0.0 - 0.00050	No
Endosulfan I	g/m³	< 0.010 ± 0.0049	0.0 - 0.00050	No
Endosulfan II	g/m³	< 0.010 ± 0.0057	0.0 - 0.00050	No
Endosulfan sulphate	g/m³	< 0.010 ± 0.0049	0.0 - 0.00050	No
Endrin	g/m³	< 0.010 ± 0.0050	0.0 - 0.00050	No
Endrin ketone	g/m³	< 0.010 ± 0.0053	0.0 - 0.00050	No
Fluoranthene	g/m³	< 0.003 ± 0.0017	0.0 - 0.000125	No
Fluorene	g/m³	< 0.003 ± 0.0017	0.0 - 0.000125	No
Heptachlor	g/m³	< 0.005 ± 0.0027	0.0 - 0.00025	No
Heptachlor epoxide	g/m³	< 0.005 ± 0.0029	0.0 - 0.00025	No
Hexachlorobenzene	g/m ³	< 0.005 ± 0.0029	0.0 - 0.00025	No
Hexachlorobutadiene	g/m³	< 0.010 ± 0.0056	0.0 - 0.00050	No
Hexachloroethane	g/m³	< 0.010 ± 0.0041	0.0 - 0.00050	No
Indeno(1,2,3-c,d)pyrene	g/m³	< 0.003 ± 0.00074	0.0 - 0.00025	No
Isophorone	g/m³	< 0.005 ± 0.0029	0.0 - 0.00025	No
2-Methylnaphthalene	g/m³	< 0.003 ± 0.0016	0.0 - 0.000125	No
3 & 4-Methylphenol (m- + p-cresol)	g/m³	< 0.010 ± 0.0043	0.0 - 0.00050	No

blank PrepWS xwSVasc - Semivolatile Water Analysis: 4898.1					
		Results	Control Limits	Outside Limit (Yes/No)	
2-Methylphenol (o-Cresol)	g/m³	$< 0.005 \pm 0.0021$	0.0 - 0.00025	No	
Naphthalene	g/m³	< 0.003 ± 0.0016	0.0 - 0.000125	No	
Nitrobenzene	g/m³	< 0.005 ± 0.0026	0.0 - 0.00025	No	
2-Nitrophenol	g/m³	< 0.010 ± 0.0051	0.0 - 0.00050	No	
N-Nitrosodi-n-propylamine	g/m³	< 0.010 ± 0.0055	0.0 - 0.00050	No	
N-Nitrosodiphenylamine + Diphenylamine	g/m³	< 0.010 ± 0.0028	0.0 - 0.00050	No	
Pentachlorophenol (PCP)	g/m³	< 0.10 ± 0.048	0.0 - 0.0050	No	
Phenanthrene	g/m³	< 0.003 ± 0.0017	0.0 - 0.000125	No	
Phenol	g/m³	< 0.010 ± 0.0050	0.0 - 0.00050	No	
Pyrene	g/m³	< 0.003 ± 0.0016	0.0 - 0.000125	No	
1,2,4-Trichlorobenzene	g/m³	< 0.005 ± 0.0029	0.0 - 0.00025	No	
2,4,5-Trichlorophenol	g/m³	< 0.010 ± 0.0050	0.0 - 0.00050	No	
2,4,6-Trichlorophenol	g/m³	< 0.010 ± 0.0045	0.0 - 0.00050	No	

Fluid 3 Blank (glass) PrepWS SPLP PrepWS xwllPAHsc - Polycyclic Aromatic Hydrocarbon Water Analysis: 5584.3				
	Results	Control Limits	Outside Limit (Yes/No)	
Acenaphthene g/r	$ 1^3 $ < 0.00010 ± 0.000045	0.0 - 0.000100	No	
Acenaphthylene g/r	10^{3} < 0.00010 ± 0.000040	0.0 - 0.000100	No	
Anthracene g/r	n ³ < 0.00010 ± 0.000057	0.0 - 0.000100	No	
Benzo[a]anthracene g/r	10^3 < 0.00010 ± 0.000059	0.0 - 0.000100	No	
Benzo[a]pyrene (BAP) g/r	10^3 < 0.00010 ± 0.000047	0.0 - 0.000100	No	
Benzo[b]fluoranthene + Benzo[j]fluoranthene g/r	3 < 0.00010 ± 0.000047	0.0 - 0.000100	No	
Benzo[g,h,i]perylene g/r	n ³ < 0.00010 ± 0.000042	0.0 - 0.000100	No	
Benzo[k]fluoranthene g/r	10^3 < 0.00010 ± 0.000051	0.0 - 0.000100	No	
Chrysene g/r	n^3 < 0.00010 ± 0.000057	0.0 - 0.000100	No	
Dibenzo[a,h]anthracene g/r	3 < 0.00010 ± 0.000042	0.0 - 0.000100	No	
Fluoranthene g/r	3 < 0.00010 ± 0.000062	0.0 - 0.000100	No	
Fluorene g/r	10^3 < 0.0002 ± 0.000051	0.0 - 0.000100	No	
Indeno(1,2,3-c,d)pyrene g/r	n^3 < 0.00010 ± 0.000042	0.0 - 0.000100	No	
Naphthalene g/r	13 < 0.0005 ± 0.00014	0.0 - 0.00050	No	
Phenanthrene g/r	10^{3} < 0.0004 ± 0.000061	0.0 - 0.000100	No	
Pyrene g/r	n ³ < 0.0002 ± 0.000054	0.0 - 0.000100	No	

QC Spike QCs					
LCS PrepWS xwTPH - WS: Total Petroleum Hydrocarbons Water Analysis: 8575.3					
		Results	Control Limits	Outside Limit (Yes/No)	
Total hydrocarbons (C7 - C36)	%	104 ± 32	70 – 130	No	

LCS PrepWS xwSVasc - Semivolatile Water Analysis: 4898.2					
		Results	Control Limits	Outside Limit (Yes/No)	
Acenaphthene	%	75 ± 28	40 – 130	No	
Acenaphthylene	%	79 ± 30	40 – 130	No	
Aldrin	%	69 ± 25	40 – 130	No	
Anthracene	%	74 ± 28	40 – 130	No	
Benzo[a]anthracene	%	89 ± 33	40 – 130	No	
Benzo[a]pyrene (BAP)	%	77 ± 46	40 – 130	No	
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	75 ± 40	40 – 130	No	
Benzo[g,h,i]perylene	%	86 ± 50	40 – 130	No	

LCS PrepWS xwSVasc - Semivolatile Wa	iter Analysis: 4898.2		
	Results	Control Limits	Outside Limit (Yes/No)
Benzo[k]fluoranthene	6 78 ± 43	40 – 130	No
Benzyl alcohol	6 70 ± 41	40 – 130	No
alpha-BHC	6 76 ± 25	40 – 130	No
beta-BHC	6 77 ± 22	40 – 130	No
delta-BHC	% 81 ± 25	40 – 130	No
gamma-BHC (Lindane)	6 74 ± 23	40 – 130	No
Bis(2-chloroethoxy) methane	6 74 ± 34	40 – 130	No
Bis(2-chloroethyl)ether	75 ± 35	40 – 130	No
Bis(2-chloroisopropyl)ether	75 ± 30	40 – 130	No
Bis(2-ethylhexyl)phthalate	95 ± 45	40 – 130	No
4-Bromophenyl phenyl ether	77 ± 31	40 – 130	No
Butylbenzylphthalate	6 91 ± 37	40 – 130	No
Carbazole	6 90 ± 32	40 – 130	No
4-Chloro-3-methylphenol	6 70 ± 27	40 – 130	No
2-Chlorophenol	6 76 ± 28	40 – 130	No
4-Chlorophenyl phenyl ether	6 85 ± 30	40 – 130	No
Chrysene	6 99 ± 38	40 – 130	No
4,4'-DDD	6 100 ± 46	40 – 130	No
4,4'-DDE	6 95 ± 39	40 – 130	No
4,4'-DDT	6 95 ± 45	40 – 130	No
Dibenzo[a,h]anthracene	6 87 ± 48	40 – 130	No
Dibenzofuran	6 84 ± 28	40 – 130	No
1,2-Dichlorobenzene	6 76 ± 31	40 – 130	No
1,3-Dichlorobenzene	6 76 ± 32	40 – 130	No
1,4-Dichlorobenzene	6 77 ± 38	40 – 130	No
2,4-Dichlorophenol	6 76 ± 29	40 – 130	No
Dieldrin	6 105 ± 43	40 – 130	No
Diethylphthalate	6 84 ± 35	40 – 130	No
2,4-Dimethylphenol	% 36 ± 22	40 – 130	Yes #1
Dimethylphthalate	6 82 ± 32	40 – 130	No
Di-n-butylphthalate	6 86 ± 32	40 – 130	No
2,4-Dinitrotoluene	6 82 ± 29	40 – 130	No
2,6-Dinitrotoluene	6 83 ± 32	40 – 130	No
Di-n-octylphthalate	% 87 ± 52	40 – 130	No
Endosulfan I	% 81 ± 38	40 – 130	No
Endosulfan II	6 90 ± 33	40 – 130	No
Endosulfan sulphate	6 110 ± 50	40 – 130	No
Endrin	6 101 ± 45	40 – 130	No
Endrin ketone	6 98 ± 41	40 – 130	No
Fluoranthene	6 80 ± 29	40 – 130	No
	6 83 ± 31	40 – 130	No
	6 76 ± 32	40 – 130	No
	6 86 ± 31	40 – 130	No
1	6 77 ± 28	40 – 130	No
	6 78 ± 30	40 – 130	No
		1	

LCS PrepWS xwSVasc - Semivolatile	Tracc	Results	Control Limits	Outside Limit (Yes/No)
		Results	Control Limits	Outside Lillit (Tes/No)
Hexachloroethane	%	77 ± 41	40 – 130	No
Indeno(1,2,3-c,d)pyrene	%	86 ± 54	40 – 130	No
Isophorone	%	69 ± 25	40 – 130	No
2-Methylnaphthalene	%	74 ± 31	40 – 130	No
3 & 4-Methylphenol (m- + p-cresol)	%	60 ± 31	40 – 130	No
2-Methylphenol (o-Cresol)	%	67 ± 36	40 – 130	No
Naphthalene	%	77 ± 33	40 – 130	No
Nitrobenzene	%	80 ± 35	40 – 130	No
2-Nitrophenol	%	72 ± 32	40 – 130	No
N-Nitrosodi-n-propylamine	%	72 ± 28	40 – 130	No
N-Nitrosodiphenylamine + Diphenylamine	%	64 ± 39	40 – 130	No
Phenanthrene	%	74 ± 27	40 – 130	No
Phenol	%	67 ± 31	40 – 130	No
Pyrene	%	90 ± 38	40 – 130	No
1,2,4-Trichlorobenzene	%	82 ± 29	40 – 130	No
2,4,5-Trichlorophenol	%	76 ± 34	40 – 130	No
2,4,6-Trichlorophenol	%	75 ± 37	40 – 130	No

LCS PAH PrepWS xwllPAHsc - Polycyclic Aromatic Hydrocarbon Water Analysis: 5584.2				
	Results	Control Limits	Outside Limit (Yes/No)	
Acenaphthene	6 115 ± 58	70 – 130	No	
Acenaphthylene	6 114 ± 62	70 – 130	No	
Anthracene	6 126 ± 46	70 – 130	No	
Benzo[a]anthracene	6 112 ± 36	70 – 130	No	
Benzo[a]pyrene (BAP)	6 120 ± 58	70 – 130	No	
Benzo[b]fluoranthene + Benzo[j]fluoranthene	6 109 ± 53	70 – 130	No	
Benzo[g,h,i]perylene	6 113 ± 59	70 – 130	No	
Benzo[k]fluoranthene	6 116 ± 52	70 – 130	No	
Chrysene	6 111 ± 40	70 – 130	No	
Dibenzo[a,h]anthracene	6 119 ± 62	70 – 130	No	
Fluoranthene	6 117 ± 31	70 – 130	No	
Fluorene	6 117 ± 52	70 – 130	No	
Indeno(1,2,3-c,d)pyrene	6 106 ± 56	70 – 130	No	
Naphthalene	95 ± 63	70 – 130	No	
Phenanthrene	6 118 ± 36	70 – 130	No	
Pyrene	6 126 ± 51	70 – 130	No	

Sample Spike QCs					
sample spike PrepWS xwTPH - WS: Total Petroleum Hydrocarbons Water Analysis: 8575.19					
		Results	Control Limits	Outside Limit (Yes/No)	
Total hydrocarbons (C7 - C36)	%	104 ± 32	70 – 130	No	

Sample Spike PAH PrepWS xwllPAHsc - Polycyclic Aromatic Hydrocarbon Water Analysis: 5584.10				
	Results	Control Limits	Outside Limit (Yes/No)	
Acenaphthene %	118 ± 60	70 – 130	No	
Acenaphthylene %	109 ± 59	70 – 130	No	
Anthracene %	128 ± 47	70 – 130	No	
Benzo[a]anthracene %	114 ± 37	70 – 130	No	

Sample Spike PAH PrepWS xwllPAHsc - Polycyclic Aromatic Hydrocarbon Water Analysis: 5584.10				
		Results	Control Limits	Outside Limit (Yes/No)
Benzo[a]pyrene (BAP)	%	125 ± 61	70 – 130	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	113 ± 55	70 – 130	No
Benzo[g,h,i]perylene	%	112 ± 59	70 – 130	No
Benzo[k]fluoranthene	%	121 ± 54	70 – 130	No
Chrysene	%	115 ± 42	70 – 130	No
Dibenzo[a,h]anthracene	%	120 ± 63	70 – 130	No
Fluoranthene	%	119 ± 31	70 – 130	No
Fluorene	%	117 ± 52	70 – 130	No
Indeno(1,2,3-c,d)pyrene	%	108 ± 57	70 – 130	No
Naphthalene	%	68 ± 45	70 – 130	Yes #2
Phenanthrene	%	120 ± 37	70 – 130	No
Pyrene	%	130 ± 53	70 – 130	No

Reference Material QCs					
Solids QC - Suspended Solids	s, Total: 23201.	3			
		Results	Control Limits	Outside Limit (Yes/No)	
Total Suspended Solids	g/m ³	1,930 ± 280	1,600 – 2,400	No	

Solids QC - Suspended Solids, Total: 23213.3					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Suspended Solids	g/m³	2,020 ± 290	1,600 – 2,400	No	

Analyst's Comments

^{#1} The Laboratory Control Spike (LCS) recovery for this analyte was below the acceptable recovery range of the method. The corresponding sample result was accepted because the rest of the targets in the LCS were within the expected ranges. There were no phenolic target positives detected in the sample.

^{#2} The sample spike recovery was outside the acceptable recovery range for this analyte due to elevated incurred target compounds in the sample.



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Quality Assurance Report

Page 1 of 5

QCPv1

Client: Contact: Aurecon New Zealand Limited

Tiana Hill

C/- Aurecon New Zealand Limited

PO Box 9762 Newmarket Auckland 1149 Lab No: **Date Received: Date Reported:**

3683703 01-Oct-2024 04-Oct-2024

Quote No: Order No:

126272

Client Reference: 521290-064 Submitted By: Tiana Hill

Sample Specific QCs					
Polycyclic Aromatic Hydrocarbons Screening in Soil					
		3683703.5	Control Limits	Outside Limit (Yes/No)	
1-methylnaphthalene-d10	%	84	65 – 130	No	
Benzo[a]pyrene-d12	%	89	70 – 140	No	
Fluoranthene-d10	%	87	66 – 130	No	

Blank QCs Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11080.16					
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No	
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No	
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No	
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No	
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No	

Digest Blank 2 PrepWS est	oig - WS: High	/olume Environmental Soil:	s by ICP-MS (HVesTR): 1108	80.30
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16336.1				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	mg/kg dry wt	$< 0.010 \pm 0.032$	0.0 – 0.0100	No
2-Methylnaphthalene	mg/kg dry wt	$< 0.010 \pm 0.032$	0.0 – 0.0100	No
Acenaphthylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Acenaphthene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 – 0.0100	No
Anthracene	mg/kg dry wt	< 0.010 ± 0.0060	0.0 – 0.0100	No
Benzo[a]anthracene	mg/kg dry wt	< 0.010 ± 0.0062	0.0 – 0.0100	No
Benzo[a]pyrene (BAP)	mg/kg dry wt	< 0.010 ± 0.0066	0.0 – 0.0100	No
Benzo[b]fluoranthene + Benzo[j] fluoranthene	mg/kg dry wt	< 0.010 ± 0.0065	0.0 - 0.0100	No
Benzo[e]pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No

Lab No: 3683703-QCPv1 Hill Labs Page 1 of 5

Blank 1 PrepWS xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16336.1				
		Results	Control Limits	Outside Limit (Yes/No)
Benzo[g,h,i]perylene	mg/kg dry wt	$< 0.010 \pm 0.0064$	0.0 - 0.0100	No
Benzo[k]fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Chrysene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Dibenzo[a,h]anthracene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Fluoranthene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Fluorene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Indeno(1,2,3-c,d)pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Naphthalene	mg/kg dry wt	< 0.05 ± 0.031	0.0 - 0.050	No
Perylene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Phenanthrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No
Pyrene	mg/kg dry wt	< 0.010 ± 0.0066	0.0 - 0.0100	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11082.16				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 — 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11082.29				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

50x Manual Dilution Digest Blank PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11082.61				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 — 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11083.16				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	$< 0.10 \pm 0.066$	-0.100 - 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No

Digest Blank 1 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11083.16				
Results Control Limits Outside Limit (Yes/No)				
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

Digest Blank 2 PrepWS esDig - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11083.32				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Cadmium	mg/kg dry wt	< 0.10 ± 0.066	-0.100 – 0.100	No
Total Recoverable Chromium	mg/kg dry wt	< 2 ± 1.3	-2.0 – 2.0	No
Total Recoverable Copper	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Lead	mg/kg dry wt	< 0.4 ± 0.26	-0.40 - 0.40	No
Total Recoverable Nickel	mg/kg dry wt	< 2 ± 1.4	-2.0 – 2.0	No
Total Recoverable Zinc	mg/kg dry wt	< 4 ± 2.7	-4.0 – 4.0	No

QC Spike QCs				
LCS TPH PrepWS xsSHOC - Total	al Petroleur	m Hydrocarbon Soil Analys	sis: 14307.3	
		Results	Control Limits	Outside Limit (Yes/No)
Total hydrocarbons (C7 - C36)	%	90 ± 43	70 – 130	No

LCS OC/PAH xsSHOC - WS: Polycyclic Aromatic Hydrocarbons Soil Analysis: 16336.2				
		Results	Control Limits	Outside Limit (Yes/No)
1-Methylnaphthalene	%	84 ± 21	78 – 122	No
2-Methylnaphthalene	%	81 ± 20	72 – 117	No
Acenaphthylene	%	97.0 ± 8.8	75 – 118	No
Acenaphthene	%	98 ± 28	84 – 119	No
Anthracene	%	98 ± 30	79 – 121	No
Benzo[a]anthracene	%	99 ± 26	81 – 123	No
Benzo[a]pyrene (BAP)	%	98.0 ± 7.5	76 – 123	No
Benzo[b]fluoranthene + Benzo[j]fluoranthene	%	97 ± 20	80 – 121	No
Benzo[e]pyrene	%	85.0 ± 6.5	78 – 110	No
Benzo[g,h,i]perylene	%	101 ± 18	80 – 124	No
Benzo[k]fluoranthene	%	95 ± 12	79 – 121	No
Chrysene	%	92 ± 14	83 – 121	No
Dibenzo[a,h]anthracene	%	99 ± 13	78 – 124	No
Fluoranthene	%	95.0 ± 9.6	81 – 122	No
Fluorene	%	100 ± 12	86 – 122	No
Indeno(1,2,3-c,d)pyrene	%	96.0 ± 8.9	83 – 123	No
Naphthalene	%	95 ± 24	84 – 118	No
Perylene	%	85.0 ± 6.5	76 – 107	No
Phenanthrene	%	94 ± 14	84 – 120	No
Pyrene	%	97 ± 13	79 – 123	No

Sample Spike QCs Matrix Spike TPH PrepWS xsSHOC - Total Petroleum Hydrocarbon Soil Analysis: 14307.24 Results Control Limits Outside Limit (Yes/No) Total hydrocarbons (C7 - C36) % 90 ± 43 70 – 130 No

Reference Material QCs					
SETOC-705 QC - WS: Hig	gh Volume Enviro	onmental Soils by ICP-MS (F	lVesTR): 11080.17		
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	10.9 ± 2.1	9.3 – 12.9	No	

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11080.17				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Cadmium	mg/kg dry wt	0.86 ± 0.14	0.72 - 0.99	No
Total Recoverable Chromium	mg/kg dry wt	26.8 ± 4.4	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.2 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	33.6 ± 5.1	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	14.5 ± 2.3	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	198 ± 15	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11080.47				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	12.7 ± 2.3	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.92 ± 0.15	0.72 – 0.99	No
Total Recoverable Chromium	mg/kg dry wt	30.9 ± 5.0	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	14.7 ± 2.4	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	36.6 ± 5.5	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	15.7 ± 2.4	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	217 ± 16	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11082.17					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	10.2 ± 2.0	9.3 – 12.9	No	
Total Recoverable Cadmium	mg/kg dry wt	0.83 ± 0.14	0.72 – 0.99	No	
Total Recoverable Chromium	mg/kg dry wt	26.0 ± 4.3	21 – 32	No	
Total Recoverable Copper	mg/kg dry wt	13.1 ± 2.3	11.6 – 15.3	No	
Total Recoverable Lead	mg/kg dry wt	32.2 ± 4.9	29 – 38	No	
Total Recoverable Nickel	mg/kg dry wt	14.3 ± 2.3	11.6 – 17.1	No	
Total Recoverable Zinc	mg/kg dry wt	194 ± 14	171 – 230	No	

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11082.37				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	10.3 ± 2.1	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.80 ± 0.13	0.72 – 0.99	No
Total Recoverable Chromium	mg/kg dry wt	25.9 ± 4.3	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	12.4 ± 2.2	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	31.4 ± 4.8	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	13.3 ± 2.2	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	196 ± 15	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11082.62				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Arsenic	mg/kg dry wt	9.8 ± 2.0	9.3 – 12.9	No
Total Recoverable Cadmium	mg/kg dry wt	0.77 ± 0.13	0.72 - 0.99	No
Total Recoverable Chromium	mg/kg dry wt	24.2 ± 4.0	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	12.1 ± 2.2	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	29.7 ± 4.5	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	13.1 ± 2.2	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	180 ± 13	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11083.17				
Results Control Limits Outside Limit (Yes/No)				
Total Recoverable Arsenic	mg/kg dry wt	11.5 ± 2.2	9.3 – 12.9	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11083.17				
		Results	Control Limits	Outside Limit (Yes/No)
Total Recoverable Cadmium	mg/kg dry wt	0.83 ± 0.14	0.72 - 0.99	No
Total Recoverable Chromium	mg/kg dry wt	25.5 ± 4.2	21 – 32	No
Total Recoverable Copper	mg/kg dry wt	13.1 ± 2.3	11.6 – 15.3	No
Total Recoverable Lead	mg/kg dry wt	34.8 ± 5.3	29 – 38	No
Total Recoverable Nickel	mg/kg dry wt	13.7 ± 2.2	11.6 – 17.1	No
Total Recoverable Zinc	mg/kg dry wt	197 ± 15	171 – 230	No

SETOC-705 QC - WS: High Volume Environmental Soils by ICP-MS (HVesTR): 11083.49					
		Results	Control Limits	Outside Limit (Yes/No)	
Total Recoverable Arsenic	mg/kg dry wt	11.5 ± 2.2	9.3 – 12.9	No	
Total Recoverable Cadmium	mg/kg dry wt	0.85 ± 0.14	0.72 – 0.99	No	
Total Recoverable Chromium	mg/kg dry wt	27.1 ± 4.4	21 – 32	No	
Total Recoverable Copper	mg/kg dry wt	13.8 ± 2.3	11.6 – 15.3	No	
Total Recoverable Lead	mg/kg dry wt	33.7 ± 5.1	29 – 38	No	
Total Recoverable Nickel	mg/kg dry wt	13.6 ± 2.2	11.6 – 17.1	No	
Total Recoverable Zinc	mg/kg dry wt	199 ± 15	171 – 230	No	

Lab No: 3683703-QCPv1 Hill Labs Page 5 of 5