

CERTIFICATE OF ANALYSIS 398398

Client Details

Client	Martens & Associates Pty Ltd
Attention	Dean Shi
Address	Suite 201, 20 George St, Hornsby, NSW, 2077

Sample Details

Your Reference	<u>P2007619, Clarence Sand Quarry</u>
Number of Samples	8 Water
Date samples received	17/12/2025
Date completed instructions received	17/12/2025

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client unless as indicated below in the method summaries. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	23/12/2025
Date of Issue	23/12/2025

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Results Approved By

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 Larry Ye, Senior Chemist

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Nancy Zhang, Laboratory Manager

vTRH in Water (C6-C9) NEPM

Our Reference		398398-1	398398-2	398398-3	398398-4	398398-5
Your Reference	UNITS	7619 / EPL1	7619 / EPL2	7619 / EPL3	7619 / EPL4	7619 / EPL6
Date Sampled		16/12/2025	16/12/2025	16/12/2025	16/12/2025	16/12/2025
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	18/12/2025	18/12/2025	18/12/2025	18/12/2025	18/12/2025
Date analysed	-	19/12/2025	19/12/2025	19/12/2025	19/12/2025	19/12/2025
TRH C ₆ - C ₉	µg/L	<10	<10	<10	<10	<10
TRH C ₆ - C ₁₀	µg/L	<10	<10	<10	<10	<10
Surrogate Dibromofluoromethane	%	101	101	100	101	101
Surrogate Toluene-d8	%	100	99	99	99	99
Surrogate 4-Bromofluorobenzene	%	99	99	100	99	100

vTRH in Water (C6-C9) NEPM

Our Reference		398398-6	398398-7	398398-8
Your Reference	UNITS	7619 / EPL7	7619 / EPL9	7619 / EPL10
Date Sampled		16/12/2025	16/12/2025	16/12/2025
Type of sample		Water	Water	Water
Date extracted	-	18/12/2025	18/12/2025	18/12/2025
Date analysed	-	19/12/2025	19/12/2025	19/12/2025
TRH C ₆ - C ₉	µg/L	<10	<10	<10
TRH C ₆ - C ₁₀	µg/L	<10	<10	<10
Surrogate Dibromofluoromethane	%	101	101	101
Surrogate Toluene-d8	%	99	99	99
Surrogate 4-Bromofluorobenzene	%	98	99	99

svTRH (C10-C40) in Water						
Our Reference		398398-1	398398-2	398398-3	398398-4	398398-5
Your Reference	UNITS	7619 / EPL1	7619 / EPL2	7619 / EPL3	7619 / EPL4	7619 / EPL6
Date Sampled		16/12/2025	16/12/2025	16/12/2025	16/12/2025	16/12/2025
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	18/12/2025	18/12/2025	18/12/2025	18/12/2025	18/12/2025
Date analysed	-	18/12/2025	18/12/2025	19/12/2025	19/12/2025	19/12/2025
TRH C ₁₀ - C ₁₄	µg/L	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	µg/L	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆	µg/L	<50	<50	<50	<50	<50
TRH >C ₁₆ - C ₃₄	µg/L	<100	<100	<100	<100	<100
TRH >C ₃₄ - C ₄₀	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	81	81	84	85	83

svTRH (C10-C40) in Water				
Our Reference		398398-6	398398-7	398398-8
Your Reference	UNITS	7619 / EPL7	7619 / EPL9	7619 / EPL10
Date Sampled		16/12/2025	16/12/2025	16/12/2025
Type of sample		Water	Water	Water
Date extracted	-	18/12/2025	18/12/2025	18/12/2025
Date analysed	-	19/12/2025	19/12/2025	19/12/2025
TRH C ₁₀ - C ₁₄	µg/L	<50	<50	<50
TRH C ₁₅ - C ₂₈	µg/L	<100	<100	<100
TRH C ₂₉ - C ₃₆	µg/L	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50
TRH >C ₁₀ - C ₁₆	µg/L	<50	<50	<50
TRH >C ₁₆ - C ₃₄	µg/L	<100	<100	<100
TRH >C ₃₄ - C ₄₀	µg/L	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50
Surrogate o-Terphenyl	%	79	82	85

HM in water - dissolved						
Our Reference		398398-1	398398-2	398398-3	398398-4	398398-5
Your Reference	UNITS	7619 / EPL1	7619 / EPL2	7619 / EPL3	7619 / EPL4	7619 / EPL6
Date Sampled		16/12/2025	16/12/2025	16/12/2025	16/12/2025	16/12/2025
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	22/12/2025	22/12/2025	22/12/2025	22/12/2025	22/12/2025
Date analysed	-	22/12/2025	22/12/2025	22/12/2025	22/12/2025	22/12/2025
Arsenic-Dissolved	µg/L	<1	<1	<1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	<1	<1	<1	<1	2
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	0.2
Nickel-Dissolved	µg/L	<1	<1	<1	<1	1
Zinc-Dissolved	µg/L	9	2	6	8	92

HM in water - dissolved				
Our Reference		398398-6	398398-7	398398-8
Your Reference	UNITS	7619 / EPL7	7619 / EPL9	7619 / EPL10
Date Sampled		16/12/2025	16/12/2025	16/12/2025
Type of sample		Water	Water	Water
Date prepared	-	22/12/2025	22/12/2025	22/12/2025
Date analysed	-	22/12/2025	22/12/2025	22/12/2025
Arsenic-Dissolved	µg/L	<1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1
Copper-Dissolved	µg/L	2	1	<1
Lead-Dissolved	µg/L	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	0.06
Nickel-Dissolved	µg/L	2	<1	<1
Zinc-Dissolved	µg/L	18	8	2

Ion Balance						
Our Reference		398398-1	398398-2	398398-3	398398-4	398398-5
Your Reference	UNITS	7619 / EPL1	7619 / EPL2	7619 / EPL3	7619 / EPL4	7619 / EPL6
Date Sampled		16/12/2025	16/12/2025	16/12/2025	16/12/2025	16/12/2025
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	23/12/2025	23/12/2025	23/12/2025	23/12/2025	23/12/2025
Date analysed	-	23/12/2025	23/12/2025	23/12/2025	23/12/2025	23/12/2025
Calcium - Dissolved	mg/L	0.6	<0.5	<0.5	<0.5	<0.5
Potassium - Dissolved	mg/L	2	0.6	2	2	0.6
Sodium - Dissolved	mg/L	3	3	3	3	3
Magnesium - Dissolved	mg/L	<0.5	<0.5	<0.5	<0.5	0.6
Hardness (calc) equivalent CaCO ₃	mg/L	<3	<3	<3	<3	<3
Hydroxide Alkalinity (OH ⁻) as CaCO ₃	mg/L	<5	<5	<5	<5	<5
Bicarbonate Alkalinity as CaCO ₃	mg/L	<5	<5	<5	<5	5
Carbonate Alkalinity as CaCO ₃	mg/L	<5	<5	<5	<5	<5
Total Alkalinity as CaCO ₃	mg/L	<5	<5	<5	<5	5
Sulphate, SO ₄	mg/L	<1	<1	<1	<1	<1
Chloride, Cl	mg/L	6	6	6	7	6
Ionic Balance	%	13	-1.0	4.0	3.0	-13

Ion Balance				
Our Reference		398398-6	398398-7	398398-8
Your Reference	UNITS	7619 / EPL7	7619 / EPL9	7619 / EPL10
Date Sampled		16/12/2025	16/12/2025	16/12/2025
Type of sample		Water	Water	Water
Date prepared	-	23/12/2025	23/12/2025	23/12/2025
Date analysed	-	23/12/2025	23/12/2025	23/12/2025
Calcium - Dissolved	mg/L	<0.5	<0.5	<0.5
Potassium - Dissolved	mg/L	<0.5	<0.5	0.5
Sodium - Dissolved	mg/L	2	4	3
Magnesium - Dissolved	mg/L	<0.5	<0.5	0.6
Hardness (calc) equivalent CaCO ₃	mg/L	<3	<3	<3
Hydroxide Alkalinity (OH ⁻) as CaCO ₃	mg/L	<5	<5	<5
Bicarbonate Alkalinity as CaCO ₃	mg/L	<5	10	<5
Carbonate Alkalinity as CaCO ₃	mg/L	<5	<5	<5
Total Alkalinity as CaCO ₃	mg/L	<5	10	<5
Sulphate, SO ₄	mg/L	<1	<1	<1
Chloride, Cl	mg/L	3	6	5
Ionic Balance	%	6.0	-35	13

Miscellaneous Inorganics

Our Reference		398398-1	398398-2	398398-3	398398-4	398398-5
Your Reference	UNITS	7619 / EPL1	7619 / EPL2	7619 / EPL3	7619 / EPL4	7619 / EPL6
Date Sampled		16/12/2025	16/12/2025	16/12/2025	16/12/2025	16/12/2025
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	17/12/2025	17/12/2025	17/12/2025	17/12/2025	17/12/2025
Date analysed	-	17/12/2025	17/12/2025	17/12/2025	17/12/2025	17/12/2025
pH	pH Units	5.4	5.3	5.2	5.0	4.9
Electrical Conductivity	µS/cm	110	98	95	130	120
Total Suspended Solids	mg/L	56	28	19	24	[NA]
Turbidity	NTU	150	53	52	11	[NA]
BOD	mg/L	<10	<10	<10	<10	<10
Dissolved Oxygen*	mg/L	7.5	7.7	7.7	7.3	[NA]

Miscellaneous Inorganics

Our Reference		398398-6	398398-7	398398-8
Your Reference	UNITS	7619 / EPL7	7619 / EPL9	7619 / EPL10
Date Sampled		16/12/2025	16/12/2025	16/12/2025
Type of sample		Water	Water	Water
Date prepared	-	17/12/2025	17/12/2025	17/12/2025
Date analysed	-	17/12/2025	17/12/2025	17/12/2025
pH	pH Units	4.7	5.2	5.0
Electrical Conductivity	µS/cm	53	160	97
BOD	mg/L	<10	9	<10

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell.
Inorg-006	Alkalinity - determined titrimetrically in accordance with APHA latest edition, 2320-B.
Inorg-019	Suspended Solids - determined gravimetrically by filtration of the sample. The samples are dried at 104+/-5°C.
Inorg-022	Turbidity - measured nephelometrically using a turbidimeter, in accordance with APHA latest edition, 2130-B.
Inorg-040	The concentrations of the major ions (mg/L) are converted to milliequivalents and summed. The ionic balance should be within +/- 15% ie total anions = total cations +/-15%.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Inorg-091	BOD - Analysed in accordance with APHA latest edition 5210 D and in house INORG-091.
Inorg-112	Dissolved Oxygen using membrane electrode. Note this analysis should ideally be carried out immediately after sampling.
Metals-020	Determination of various metals/elements by ICP-AES. Total Phosphate determined stoichiometrically from Phosphorus (assumed to be present as Phosphate). Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation. Submission of low masses of sample e.g. for dust samples, may result in raised PQLs. Where molecular anion forms are calculated from an element (e.g. SO4 from S or PO4 from P stoichiometrically), the assumption is that the element is only present in that molecular anion form.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS. Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements. Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

Client Reference: P2007619, Clarence Sand Quarry

QUALITY CONTROL: vTRH in Water (C6-C9) NEPM					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			18/12/2025	1	18/12/2025	19/12/2025		18/12/2025	[NT]
Date analysed	-			19/12/2025	1	19/12/2025	22/12/2025		19/12/2025	[NT]
TRH C ₆ - C ₉	µg/L	10	Org-023	<10	1	<10	<10	0	112	[NT]
TRH C ₆ - C ₁₀	µg/L	10	Org-023	<10	1	<10	<10	0	112	[NT]
Surrogate Dibromofluoromethane	%		Org-023	101	1	101	102	1	100	[NT]
Surrogate Toluene-d8	%		Org-023	101	1	100	98	2	99	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	99	1	99	99	0	100	[NT]

Client Reference: P2007619, Clarence Sand Quarry

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	398398-2
Date extracted	-			18/12/2025	1	18/12/2025	18/12/2025		18/12/2025	18/12/2025
Date analysed	-			18/12/2025	1	18/12/2025	18/12/2025		18/12/2025	19/12/2025
TRH C ₁₀ - C ₁₄	µg/L	50	Org-020	<50	1	<50	<50	0	103	88
TRH C ₁₅ - C ₂₈	µg/L	100	Org-020	<100	1	<100	<100	0	110	89
TRH C ₂₉ - C ₃₆	µg/L	100	Org-020	<100	1	<100	<100	0	100	85
TRH >C ₁₀ - C ₁₆	µg/L	50	Org-020	<50	1	<50	<50	0	103	88
TRH >C ₁₆ - C ₃₄	µg/L	100	Org-020	<100	1	<100	<100	0	110	89
TRH >C ₃₄ - C ₄₀	µg/L	100	Org-020	<100	1	<100	<100	0	100	85
Surrogate o-Terphenyl	%		Org-020	80	1	81	86	6	136	81

Client Reference: P2007619, Clarence Sand Quarry

QUALITY CONTROL: HM in water - dissolved					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	398398-2
Date prepared	-			22/12/2025	1	22/12/2025	22/12/2025		22/12/2025	22/12/2025
Date analysed	-			22/12/2025	1	22/12/2025	22/12/2025		22/12/2025	22/12/2025
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	100	96
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	97	96
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	93	94
Copper-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	96	95
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	101	107
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	[NT]		93	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	95	95
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	9	9	0	97	95

QUALITY CONTROL: HM in water - dissolved					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	4	22/12/2025	22/12/2025		[NT]	[NT]
Date analysed	-			[NT]	4	22/12/2025	22/12/2025		[NT]	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	[NT]	4	<1	[NT]		[NT]	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	[NT]	4	<0.1	[NT]		[NT]	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	[NT]	4	<1	[NT]		[NT]	[NT]
Copper-Dissolved	µg/L	1	Metals-022	[NT]	4	<1	[NT]		[NT]	[NT]
Lead-Dissolved	µg/L	1	Metals-022	[NT]	4	<1	[NT]		[NT]	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	[NT]	4	<0.05	<0.05	0	[NT]	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	[NT]	4	<1	[NT]		[NT]	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	[NT]	4	8	[NT]		[NT]	[NT]

Client Reference: P2007619, Clarence Sand Quarry

QUALITY CONTROL: Ion Balance					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	398398-2
Date prepared	-			23/12/2025	1	23/12/2025	23/12/2025		23/12/2025	23/12/2025
Date analysed	-			23/12/2025	1	23/12/2025	23/12/2025		23/12/2025	23/12/2025
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	0.6	0.7	15	103	[NT]
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	2	2	0	102	[NT]
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	3	3	0	96	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	<0.5	<0.5	0	100	[NT]
Hardness (calc) equivalent CaCO ₃	mg/L	3	Metals-020	[NT]	1	<3	<3	0	[NT]	[NT]
Hydroxide Alkalinity (OH ⁻) as CaCO ₃	mg/L	5	Inorg-006	<5	1	<5	[NT]		[NT]	[NT]
Bicarbonate Alkalinity as CaCO ₃	mg/L	5	Inorg-006	<5	1	<5	[NT]		[NT]	[NT]
Carbonate Alkalinity as CaCO ₃	mg/L	5	Inorg-006	<5	1	<5	[NT]		[NT]	[NT]
Total Alkalinity as CaCO ₃	mg/L	5	Inorg-006	<5	1	<5	[NT]		119	[NT]
Sulphate, SO ₄	mg/L	1	Inorg-081	<1	1	<1	<1	0	107	105
Chloride, Cl	mg/L	1	Inorg-081	<1	1	6	6	0	108	104
Ionic Balance	%		Inorg-040	[NT]	1	13	[NT]		[NT]	[NT]

QUALITY CONTROL: Ion Balance					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	398398-3
Date prepared	-			[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	23/12/2025
Date analysed	-			[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	23/12/2025
Calcium - Dissolved	mg/L	0.5	Metals-020	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	112
Potassium - Dissolved	mg/L	0.5	Metals-020	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	113
Sodium - Dissolved	mg/L	0.5	Metals-020	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	91
Magnesium - Dissolved	mg/L	0.5	Metals-020	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]	109

Client Reference: P2007619, Clarence Sand Quarry

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			17/12/2025	[NT]	[NT]	[NT]	[NT]	17/12/2025	[NT]
Date analysed	-			17/12/2025	[NT]	[NT]	[NT]	[NT]	17/12/2025	[NT]
pH	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	101	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Total Suspended Solids	mg/L	5	Inorg-019	<5	[NT]	[NT]	[NT]	[NT]	93	[NT]
Turbidity	NTU	0.1	Inorg-022	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]
BOD	mg/L	5	Inorg-091	<5	[NT]	[NT]	[NT]	[NT]	84	[NT]
Dissolved Oxygen*	mg/L	0.1	Inorg-112	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Air volumes are typically provided by customers (often as flow rate(s) and sampling time(s) and/or simply volumes) sampled or exposure times (determines 'volume' passive badges are exposed to)). Hence in such circumstances the volume measurement is inevitably not covered by Envirolab's NATA accreditation. An exception may occur where Envirolab Newcastle does the sampling where accreditation exists for certain types of sampling and hence volume determination(s). Note air volumes are often used to determine concentrations for dust and/or analyses on filters, sorbents and in impingers. For canister sampling, the air volume is covered by Envirolab's NATA accreditation.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates can be downloaded from the [Envirolab Resources website](#) or obtained directly by contacting the laboratory.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

For Dust Deposit Gauge (DDG) analysis the sampling, sampling period and funnel exposure area do not fall under Envirolab's NATA accreditation (unless the Newcastle laboratory where responsible for the sampling), hence the annotation on the DDG units of reporting.

Urine Analysis - The BEI values listed are taken from the 2022 edition of "TLVs and BEIs Threshold Limits" by ACGIH.

Report Comments

Dissolved Metals: no filtered, preserved sample was received, therefore the unpreserved sample was filtered through 0.45µm filter at the lab.

Note: there is a possibility some elements may be underestimated.

MISC_INORG:BOD:PQL has been raised due to the small volume of sample supplied.

ION_BALANCE:The mass inbalance may be caused by other ions that have not been measured.