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## **CERTIFICATE OF ANALYSIS 373246**

### **Client Details**

<b>Client</b>	NSW Health
<b>Attention</b>	Kwendy Cavanagh
<b>Address</b>	Locked Bag 2030, ST LEONARDS, NSW, 1590

### **Sample Details**

<b>Your Reference</b>	<b><u>Narrabri Shire Council - Namoi Reservoir</u></b>
<b>Number of Samples</b>	3 Water
<b>Date samples received</b>	18/02/2025
<b>Date completed instructions received</b>	18/02/2025

### **Analysis Details**

Please refer to the following pages for results, methodology summary and quality control data.  
Samples were analysed as received from the client. 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.

### **Report Details**

<b>Date results requested by</b>	20/02/2025
<b>Date of Issue</b>	20/02/2025
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. <b>Tests not covered by NATA are denoted with *</b>	

#### **Results Approved By**

Sean McAlary, Senior Chemist

#### **Authorised By**

Nancy Zhang, Laboratory Manager

PFAS in Water LOW LEVEL Short		
Our Reference		373246-1
Your Reference	UNITS	Namoi Reservoir A24NA0100009
Barcode		A24NA0100009
Sample Site Code		N27
Date Sampled		17/02/2025
Type of sample		Water
Date prepared	-	20/02/2025
Date analysed	-	20/02/2025
Perfluorobutanesulfonic acid	µg/L	<0.001
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.005
Perfluorooctanesulfonic acid PFOS	µg/L	0.006
Perfluorooctanoic acid PFOA	µg/L	<0.001
6:2 FTS	µg/L	<0.001
8:2 FTS	µg/L	<0.002
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	97
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	96
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	76
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	90
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	95
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	94
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	86
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	95
Total Positive PFHxS & PFOS	µg/L	0.011
Total Positive PFOA & PFOS	µg/L	0.006
Total Positive PFAS	µg/L	0.011

Client Reference: Narrabri Shire Council - Namoi Reservoir

Method ID	Methodology Summary
<b>Org-029</b>	<p>Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3.</p> <p>Analysis is undertaken with LC-MS/MS.</p> <p>PFAS results include the sum of branched and linear isomers where applicable.</p> <p>Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components.</p> <p>Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.</p>

Client Reference: Narrabri Shire Council - Namoi Reservoir

QUALITY CONTROL: PFAS in Water LOW LEVEL Short					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			20/02/2025	[NT]	[NT]	[NT]	[NT]	20/02/2025	[NT]
Date analysed	-			20/02/2025	[NT]	[NT]	[NT]	[NT]	20/02/2025	[NT]
Perfluorobutanesulfonic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	100	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	96	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	100	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	95	[NT]
6:2 FTS	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	101	[NT]
8:2 FTS	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	116	[NT]
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%		Org-029	100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%		Org-029	77	[NT]	[NT]	[NT]	[NT]	73	[NT]
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%		Org-029	87	[NT]	[NT]	[NT]	[NT]	85	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%		Org-029	84	[NT]	[NT]	[NT]	[NT]	81	[NT]
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%		Org-029	88	[NT]	[NT]	[NT]	[NT]	87	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%		Org-029	84	[NT]	[NT]	[NT]	[NT]	96	[NT]
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%		Org-029	95	[NT]	[NT]	[NT]	[NT]	100	[NT]

## Result Definitions

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

## Quality Control Definitions

<b>Blank</b>	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.
<b>Duplicate</b>	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.
<b>Matrix Spike</b>	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.
<b>LCS (Laboratory Control Sample)</b>	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.
<b>Surrogate Spike</b>	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.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

## 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.

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.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

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.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.



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## **CERTIFICATE OF ANALYSIS 373243**

### **Client Details**

<b>Client</b>	NSW Health
<b>Attention</b>	Kwendy Cavanagh
<b>Address</b>	Locked Bag 2030, ST LEONARDS, NSW, 1590

### **Sample Details**

<b>Your Reference</b>	<b><u>Narrabri Shire Council - Elizabeth Bore</u></b>
<b>Number of Samples</b>	3 Water
<b>Date samples received</b>	18/02/2025
<b>Date completed instructions received</b>	18/02/2025

### **Analysis Details**

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

Samples were analysed as received from the client. 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.

### **Report Details**

**Date results requested by** 20/02/2025

**Date of Issue** 20/02/2025

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#### **Results Approved By**

Sean McAlary, Senior Chemist

#### **Authorised By**

Nancy Zhang, Laboratory Manager

PFAS in Water LOW LEVEL Short				
Our Reference		373243-1	373243-2	373243-3
Your Reference	UNITS	Elizabeth Bore A24NA0100006	Elizabeth Bore Duplicate	Elizabeth Bore Trip Blank
Barcode		A24NA0100006	-	-
Sample Site Code		N30	N30	N30
Date Sampled		17/02/2025	17/02/2025	17/02/2025
Type of sample		Water	Water	Water
Date prepared	-	20/02/2025	20/02/2025	20/02/2025
Date analysed	-	20/02/2025	20/02/2025	20/02/2025
Perfluorobutanesulfonic acid	µg/L	<0.001	<0.001	<0.001
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.001	<0.001	<0.001
Perfluorooctanesulfonic acid PFOS	µg/L	<0.001	<0.001	<0.001
Perfluorooctanoic acid PFOA	µg/L	<0.001	<0.001	<0.001
6:2 FTS	µg/L	<0.001	<0.001	<0.001
8:2 FTS	µg/L	<0.002	<0.002	<0.002
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	106	96	101
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	100	100	104
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	73	79	76
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	91	99	86
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	78	104	80
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	93	103	92
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	90	103	90
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	112	123	98
Total Positive PFHxS & PFOS	µg/L	<0.001	<0.001	<0.001
Total Positive PFOA & PFOS	µg/L	<0.001	<0.001	<0.001
Total Positive PFAS	µg/L	<0.001	<0.001	<0.001



Client Reference: Narrabri Shire Council - Elizabeth Bore

Method ID	Methodology Summary
<b>Org-029</b>	<p>Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3.</p> <p>Analysis is undertaken with LC-MS/MS.</p> <p>PFAS results include the sum of branched and linear isomers where applicable.</p> <p>Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components.</p> <p>Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.</p>

Client Reference: Narrabri Shire Council - Elizabeth Bore

QUALITY CONTROL: PFAS in Water LOW LEVEL Short						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	373243-2
Date prepared	-			20/02/2025	1	20/02/2025	20/02/2025		20/02/2025	20/02/2025
Date analysed	-			20/02/2025	1	20/02/2025	20/02/2025		20/02/2025	20/02/2025
Perfluorobutanesulfonic acid	µg/L	0.001	Org-029	<0.001	1	<0.001	<0.001	0	106	103
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.001	Org-029	<0.001	1	<0.001	<0.001	0	97	98
Perfluorooctanesulfonic acid PFOS	µg/L	0.001	Org-029	<0.001	1	<0.001	<0.001	0	104	100
Perfluorooctanoic acid PFOA	µg/L	0.001	Org-029	<0.001	1	<0.001	<0.001	0	93	94
6:2 FTS	µg/L	0.001	Org-029	<0.001	1	<0.001	<0.001	0	99	97
8:2 FTS	µg/L	0.002	Org-029	<0.002	1	<0.002	<0.002	0	86	95
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%		Org-029	105	1	106	100	6	105	103
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%		Org-029	99	1	100	100	0	96	97
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%		Org-029	75	1	73	78	7	70	69
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%		Org-029	84	1	91	90	1	86	91
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%		Org-029	77	1	78	90	14	81	89
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%		Org-029	90	1	93	97	4	93	94
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%		Org-029	89	1	90	96	6	102	113
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%		Org-029	104	1	112	113	1	130	142

Result Definitions	
<b>NT</b>	Not tested
<b>NA</b>	Test not required
<b>INS</b>	Insufficient sample for this test
<b>PQL</b>	Practical Quantitation Limit
<b>&lt;</b>	Less than
<b>&gt;</b>	Greater than
<b>RPD</b>	Relative Percent Difference
<b>LCS</b>	Laboratory Control Sample
<b>NS</b>	Not specified
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## Quality Control Definitions

<b>Blank</b>	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.
<b>Duplicate</b>	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.
<b>Matrix Spike</b>	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.
<b>LCS (Laboratory Control Sample)</b>	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.
<b>Surrogate Spike</b>	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.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

## Laboratory Acceptance Criteria

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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.

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.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

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.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

## CERTIFICATE OF ANALYSIS 373244

### Client Details

<b>Client</b>	NSW Health
<b>Attention</b>	Fidelis Jaravani
<b>Address</b>	Locked Bag 2030, ST LEONARDS, NSW, 1590

### Sample Details

<b>Your Reference</b>	<u>Narrabri Shire Council - Killarney Bore</u>
<b>Number of Samples</b>	3 Water
<b>Date samples received</b>	18/02/2025
<b>Date completed instructions received</b>	18/02/2025

### Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.  
 Samples were analysed as received from the client. 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.

### Report Details

<b>Date results requested by</b>	20/02/2025
<b>Date of Issue</b>	20/02/2025
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**Results Approved By**

Sean McAlary, Senior Chemist

**Authorised By**

Nancy Zhang, Laboratory Manager

PFAS in Water LOW LEVEL Short		
Our Reference		373244-1
Your Reference	UNITS	Killarney Bore A24NA0100008
Barcode		A24NA0100008
Sample Site Code		N29
Date Sampled		17/02/2025
Type of sample		Water
Date prepared	-	20/02/2025
Date analysed	-	20/02/2025
Perfluorobutanesulfonic acid	µg/L	0.006
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.031
Perfluorooctanesulfonic acid PFOS	µg/L	0.032
Perfluorooctanoic acid PFOA	µg/L	0.002
6:2 FTS	µg/L	<0.001
8:2 FTS	µg/L	<0.002
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	93
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	97
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	79
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	101
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	107
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	105
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	99
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	124
Total Positive PFHxS & PFOS	µg/L	0.063
Total Positive PFOA & PFOS	µg/L	0.034
Total Positive PFAS	µg/L	0.071

## Client Reference: Narrabri Shire Council - Killarney Bore

Method ID	Methodology Summary
<b>Org-029</b>	<p>Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3.</p> <p>Analysis is undertaken with LC-MS/MS.</p> <p>PFAS results include the sum of branched and linear isomers where applicable.</p> <p>Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components.</p> <p>Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.</p>

Client Reference: Narrabri Shire Council - Killarney Bore

QUALITY CONTROL: PFAS in Water LOW LEVEL Short					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			20/02/2025	[NT]	[NT]	[NT]	[NT]	20/02/2025	[NT]
Date analysed	-			20/02/2025	[NT]	[NT]	[NT]	[NT]	20/02/2025	[NT]
Perfluorobutanesulfonic acid	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	100	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	96	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	100	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	95	[NT]
6:2 FTS	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	101	[NT]
8:2 FTS	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	116	[NT]
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%		Org-029	100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%		Org-029	77	[NT]	[NT]	[NT]	[NT]	73	[NT]
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%		Org-029	87	[NT]	[NT]	[NT]	[NT]	85	[NT]
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<b>LCS</b>	Laboratory Control Sample
<b>NS</b>	Not specified
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## Quality Control Definitions

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<b>Duplicate</b>	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.
<b>Matrix Spike</b>	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.
<b>LCS (Laboratory Control Sample)</b>	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.
<b>Surrogate Spike</b>	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.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
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Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

## 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.

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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.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

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.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

## CERTIFICATE OF ANALYSIS 373245

### Client Details

<b>Client</b>	NSW Health
<b>Attention</b>	Kwendy Cavanagh
<b>Address</b>	Locked Bag 2030, ST LEONARDS, NSW, 1590

### Sample Details

<b>Your Reference</b>	<u>Narrabri Shire Council - Tibberena Bore</u>
<b>Number of Samples</b>	3 Water
<b>Date samples received</b>	18/02/2025
<b>Date completed instructions received</b>	18/02/2025

### Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.  
 Samples were analysed as received from the client. 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.

### Report Details

<b>Date results requested by</b>	20/02/2025
<b>Date of Issue</b>	20/02/2025
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. <b>Tests not covered by NATA are denoted with *</b>	

**Results Approved By**  
 Sean McAlary, Senior Chemist

**Authorised By**  
 Nancy Zhang, Laboratory Manager

PFAS in Water LOW LEVEL Short		
Our Reference		373245-1
Your Reference	UNITS	Tibberena Bore A24NA0100007
Barcode		A24NA0100007
Sample Site Code		N28
Date Sampled		17/02/2025
Type of sample		Water
Date prepared	-	20/02/2025
Date analysed	-	20/02/2025
Perfluorobutanesulfonic acid	µg/L	0.004
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.020
Perfluorooctanesulfonic acid PFOS	µg/L	0.031
Perfluorooctanoic acid PFOA	µg/L	0.002
6:2 FTS	µg/L	<0.001
8:2 FTS	µg/L	<0.002
Surrogate <sup>13</sup> C <sub>8</sub> PFOS	%	97
Surrogate <sup>13</sup> C <sub>2</sub> PFOA	%	100
Extracted ISTD <sup>13</sup> C <sub>3</sub> PFBS	%	77
Extracted ISTD <sup>18</sup> O <sub>2</sub> PFHxS	%	91
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOS	%	96
Extracted ISTD <sup>13</sup> C <sub>4</sub> PFOA	%	93
Extracted ISTD <sup>13</sup> C <sub>2</sub> 6:2FTS	%	86
Extracted ISTD <sup>13</sup> C <sub>2</sub> 8:2FTS	%	103
Total Positive PFHxS & PFOS	µg/L	0.051
Total Positive PFOA & PFOS	µg/L	0.032
Total Positive PFAS	µg/L	0.056

Client Reference: Narrabri Shire Council - Tibberena Bore

Method ID	Methodology Summary
<b>Org-029</b>	<p>Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3.</p> <p>Analysis is undertaken with LC-MS/MS.</p> <p>PFAS results include the sum of branched and linear isomers where applicable.</p> <p>Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.4 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components.</p> <p>Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.</p>

Client Reference: Narrabri Shire Council - Tibberena Bore

QUALITY CONTROL: PFAS in Water LOW LEVEL Short					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			20/02/2025	[NT]	[NT]	[NT]	[NT]	20/02/2025	[NT]
Date analysed	-			20/02/2025	[NT]	[NT]	[NT]	[NT]	20/02/2025	[NT]
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