

**Öhakea: Surface water and groundwater monitoring for PFAS, April 2024** 

April 2024



# **Prepared for:**

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18 September 2024

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Dear Kate and Huma

# OHAKEA: SURFACE WATER AND GROUNDWATER MONITORING FOR PFAS, APRIL 2024

#### 1.0 Introduction

Monitoring for per- and polyfluoroalkyl substances (PFAS) concentrations in groundwater and surface water was conducted between 9 and 11 April 2024 in accordance with the RNZAF Base Ōhakea PFAS Investigation: Long Term Monitoring Plan (LTMP) (PDP, 2020a). This is the eighth round of monitoring following the implementation of the LTMP (PDP, 2020a). Previous monitoring rounds, undertaken in October 2020, March 2021, October 2021, March 2022, September 2022, April 2023 and November 2023 are reported in PDP (2020b), PDP (2021), PDP (2022a), PDP (2022b), PDP (2023a), PDP (2023b) and PDP (2024) respectively.

The objectives of monitoring are to:

- Track the concentrations of PFAS in surface water and groundwater at representative locations over time to enable stakeholders to monitor plume development; and,
- Support validation of the groundwater model produced by PDP (PDP, 2019).

The scope of work included:

- The collection of groundwater samples from 18 groundwater wells or taps;
- The collection of surface water from 4 locations;
- The collection of 8 quality assurance/quality control (QA/QC) samples, including analysis of two duplicate samples; and
- Preparation of this report.

This letter reports the results of the monitoring undertaken at RNZAF Base Ōhakea ("Ōhakea" or the "base") at these sample locations, including a comparison with the findings of previous monitoring rounds (PDP, 2020b; PDP, 2021; PDP, 2022a; PDP, 2022b; PDP, 2023a, PDP 2023b; PDP 2024).









# 2.0 Methodology

# 2.1 Sampling Methodology

Sampling was undertaken by PDP field staff between 9 and 11 April 2024. Sampling was undertaken in accordance with the procedures in the draft guidance document Sampling and Analysis of Per- and Polyfluorinated Substances (Ministry for the Environment (MfE), 2018).

All samples were couriered to AsureQuality laboratory under standard chain of custody documentation following collection. All samples were analysed by AsureQuality for a suite of PFAS compounds. Copies of the laboratory reports and chain of custody documentation are provided in Appendix A.

The groundwater monitoring locations are described in Table 1, and the surface water monitoring locations are described in Table 2. Refer to Figure 1 for the monitoring locations.

Table 1: Gr	Table 1: Groundwater Monitoring Locations						
Location		HRC Bore ID	Sampling Point	Rationale	Sampled		
RNZAF Base	MW4	323153	Monitoring Well	Key source area (historic fire training area (FTA)).	09/04/24		
Ōhakea	WS1	323085	Тар	Farm bore downgradient of FTA and near site boundary with a long existing monitoring record.	10/04/24		
	GW6	-	Well	Open well downgradient of key source areas and historically elevated PFAS concentrations.	10/04/24		
	MW6	-	Monitoring Well	Key source area (run-up pit).	09/04/24		
	MW9	-	Monitoring Well	Key source area (diversion tank for hangar deluge systems).	09/04/24		
	WS2	313096	Тар	North-western plume edge (base drinking water supply).	10/04/24		
	GW111.1	323183	Monitoring Well	Downgradient of FTA.	10/04/24		
	GW111.2	323185	Monitoring Well	Downgradient of FTA. Deeper well (~40 m) to monitor the vertical extent of PFAS.	10/04/24		
	GW111.3	323187	Monitoring Well	Downgradient of FTA. Deeper well (~95 m) to monitor the vertical extent of PFAS, targeting the deeper aquifer resource that may be used for groundwater abstraction.	10/04/24		



Table 1: Groundwater Monitoring Locations						
Location	Location		Sampling Point	Rationale	Sampled	
Other	GW31	323091	Тар	Eastern plume edge.	10/04/24	
(non-NZDF) private and	GW53	-	Тар	Eastern plume edge.	10/04/24	
public land	GW65	323019	Тар	Southern plume edge.	11/04/24	
	GW67	323173	Тар	North-eastern plume edge.	Not sampled. Bore has been decommissioned	
	GW106	323175	Monitoring Well	Plume is predicted to approach and then encompass the shallow well into the future.	09/04/24	
	GW107	323177	Monitoring Well	Act as a sentinel monitoring location e.g., to monitor the predicted maximum lateral edge of the future plume.	11/04/24	
	GW108	323179	Monitoring Well	Plume is predicted to approach and then encompass the shallow well into the future.	09/04/24	
	GW109	323181	Monitoring Well	Plume is predicted to approach and then encompass the shallow well into the future.	11/04/24	
	GW112.1	-	Monitoring Well	Well near the centre of the main plume.	10/04/24	
	GW112.2	-	Monitoring Well	Well near the centre of the main plume. Deeper well (~55 m) to monitor the vertical extent of PFAS.	10/04/24	

Table 2: Surface Water Monitoring Locations				
Location	Rationale	Sampled		
SW6	Previous high PFAS concentrations leaving the base.	Not sampled, drain was dry.		
SW33	Resurgence of high PFAS concentrations on the Makowhai Stream downstream of the base. Accessible from the road.	9/04/24		
SW36	Makowhai Stream just upstream from confluence with the Rangitikei River. To assess the maximum extent of PFAS in the Makowhai Stream.	10/04/24		
SW4	Upstream location to assess whether PFAS is present in the Makowhai Stream before entering the base boundary.	10/04/24		



# 2.2 Variations from the Monitoring Plan

As noted in Table 1, bore GW67 has been decommissioned and filled in. Consequently, a sample was unable to be collected.

#### 2.3 Field Measurements

#### 2.3.1 Water Level Measurements

A summary of the groundwater level measurements recorded in the monitoring wells as part of the groundwater sampling programme is presented in Appendix B.

Pressure transducer loggers were installed in all five of the nested wells (GW111.1, GW111.2, GW111.3, GW112.1 and GW112.2) during the October 2021 monitoring round, to continuously record groundwater pressures (levels) in the monitoring wells. The logger data was downloaded during the April 2024 monitoring round.

The vertical heights of the monitoring wells were surveyed relative to a common datum by Cuttriss Consultants Limited during the November 2023 round to allow for an accurate assessment and comparison of the groundwater levels within each well.

Time series plots of the water level in each of the five wells relative to the surveyed heights of the wells are provided in Appendix B¹. In summary, the data continues to indicate that there is an upward hydraulic gradient in all monitored wells both for the deeper aquifer (GW111.3 and GW112.2) and the shallow aquifer (GW111.1, GW111.2 and GW112.1). This upward hydraulic gradient was an assumption in the PFAS groundwater model (PDP, 2019) developed for the area. Due to this upward gradient, it is considered unlikely that PFAS compounds present in the shallow aquifer would be able to migrate into the deeper aquifer. It is important to note here however, that groundwater abstraction (e.g., for irrigation) could create localised areas of downward hydraulic gradient.

# 2.3.2 Field Parameters

Using a YSI ProDSS multi-meter, and in accordance with the draft MfE (2018) guideline, field measurements were recorded for the following stabilisation criteria: electrical conductivity, pH, dissolved oxygen, temperature and turbidity. Prior to use, the ProDSS was calibrated for pH and electrical conductivity and checked periodically throughout the monitoring round. Field sheets for each sample location are presented in Appendix C.

# 2.4 Antecedent Weather Conditions and Flow Conditions

The preceding two weeks had a cumulative rainfall of 14.8 mm. The majority of this rain (10.4 mm) fell on two separate days prior to the commencement of sampling (Friday 29 March, 4.7 mm; Thursday 4 April, 5.7 mm). No rain fell during the investigation period. The Rangitikei River and surrounding streams where surface water samples were collected were clear during the sampling round. The stream at SW37 was noted to be slow flowing and the drain at SW6 was observed to be dry and was therefore unable to be sampled.

<sup>&</sup>lt;sup>1</sup> Due to logger malfunctions, there is some missing data for some of the time periods. The malfunctioning loggers were sent back to the manufacturer (Solinst) for data retrieval. Data was able to be retrieved from the logger in GW111.1, but the data on the logger from GW111.3 was corrupted. Replacement loggers, provided by Solinst, have been installed.



#### 2.5 Quality Assurance Sampling

As part of the sampling programme, the following QA/QC samples were collected:

- : Two duplicate samples.
- Two equipment rinsate blanks. One for the surface water sampling equipment (mighty gripper) and one for the groundwater monitoring equipment (water level dipper).
- : Two field blank samples.
- Two trip blank samples.

All QA/QC samples were collected in accordance with the draft methodology outlined in MfE (2018). All analysis of the QA/QC samples was undertaken by AsureQuality Laboratory in Wellington. The results of the QA/QC sampling are reported in Appendix D and further discussed in Section 3.3.

# 3.0 Sample Results and Comparison to Selected Guideline Values

#### 3.1 Selected Guideline Values

Table 3 below shows the reference guideline values against which the results have been compared.

The Water Services (Drinking Water Standards for New Zealand) Regulations 2022 came into effect on 14 November 2022. The updated standards include maximum allowable values (MAVs) for perfluorooctanoic acid (PFOA) and the Sum of Total perfluorooctane sulfonate (PFOS) + perfluorohexane sulfonate (PFHxS). These MAVs are the same as the guideline values previously used in this monitoring report, therefore the PFOA and Sum of Total PFOS + PFHxS guideline concentrations have not changed from criterion in previous reports. The reference in Table 3 has been updated to reflect these new standards.

The Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG) (2018) draft default guideline values (DGVs) for PFOS in freshwater for 99%, 95%, 90% and 80% species protection were updated in May 2023<sup>2</sup>. The draft DGVs for PFOA have not been updated. The updated draft DGVs have increased compared to the previous values. The draft DGVs and the reference in Table 3 has been updated to reflect these new guidelines.

The draft PFAS National Environmental Management Plan (NEMP) version 3.0 was released (November 2022) for consultation (HEPA, 2022). The relevant guidelines provided in the current version 2.0 of the NEMP are the same as those provided in the draft version 3.0. For the purposes of this report, the current NEMP version 2.0 is used, the ecological water quality guideline values provided in Table 5 of the NEMP 3.0 (HEPA, 2022) recommend a comparison to the ANZG (formerly ANZECC) exposure scenario for 99% species protection for slightly to moderately disturbed ecosystems. Therefore, the results from the April 2024 monitoring round have also been compared to the 99% species protection values. This is a more conservative guideline value than has historically been used in previous reports, first being used for comparison in the September 2022 monitoring round. The recently updated draft DGV for 99% species protection for Total PFOS is 0.0091 µg/L³.

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<sup>&</sup>lt;sup>2</sup> https://www.waterquality.gov.au/anz-guidelines/guideline-values/default/water-quality-toxicants/toxicants/draft-pfos-fresh-2023

 $<sup>^3</sup>$  The previous draft DGV for 99% species protection for Total PFOS was 0.00023  $\mu g/L$ .



Table 3: Environmental and Human Health Guidelines – Water					
Media	Sum of Total PFOS + PFHxS	PFOA	Total PFHxS	Total PFOS	Source
Drinking Water	0.07 μg/L	0.56 μg/L	-	-	Drinking water standard <sup>1</sup>
Ecological Freshwater Guideline 95% ecosystem protection	-	220 μg/L <sup>2</sup>	-	0.48 μg/L <sup>3</sup>	ANZG
Ecological Freshwater Guideline – 99% ecosystem protection	-	19 μg/L <sup>2</sup>	-	0.0091 μg/L <sup>3</sup>	ANZG

#### Notes:

- 1. Water Services (Drinking Water Standards for New Zealand) Regulations 2022, for PFOA, and Sum of Total PFOS + PFHxS.
- 2. Australian and New Zealand Guidelines for Fresh and Marine Water Quality technical draft guideline values as reproduced in PFAS National Environmental Management Plan Version 2.0 Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.
- ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

# 3.2 Sample Results and Comparison to Guideline Values

The analysis and discussion of sample results primarily relates to concentrations of total PFOS, total PFHxS, the Sum of Total PFOS + PFHxS and PFOA, these are the compounds for which there is an applicable New Zealand and/or Australian guideline. When discussed as a collective, these will herein be referred to as 'the core PFAS compounds'. The sample analytical results for the core PFAS compounds are presented in Tables 4 and 5 with sample locations and results shown in Figure 2.

### 3.2.1 Groundwater Monitoring Wells

The results of the laboratory analyses for the core PFAS compounds in groundwater samples collected in April 2024 are provided in Table 4. PFAS results from all sampling rounds, and for all compounds in the laboratory PFAS suite, are presented in Table E-1, Appendix E.



Table 4: Groundwater Monitoring Results (April 2024 Sampling Round)					
	Core PFAS Compounds (μg/L)				
Location	Sum of Total PFOS + PFHxS	PFOA	Total PFOS		
WS1	0.24	0.032	0.055		
WS2	0.0073	0.0015	0.0048		
MW4	1.6	0.16	1.2		
GW6	0.034	0.0036	0.014		
MW6	4.4	0.27	2.7		
MW9	1.4	0.33	0.71		
GW111.1	0.22	0.070	0.14		
GW111.2	<0.0010	<0.0010	<0.0010		
GW111.3	<0.0010	<0.0010	<0.0010		
GW31	0.12	0.019	0.045		
GW53	<0.0010	<0.0010	<0.0010		
GW65	<0.0010	<0.0010	<0.0010		
GW67	not sampled				
GW106	<0.0010	<0.0010	<0.0010		
GW107	<0.0010	<0.0010	<0.0010		
GW108	<0.0010	<0.0010	<0.0010		
GW109	<0.0010	<0.0010	<0.0010		
GW112.1	0.54	0.079	0.24		
GW112.2	<0.0010	<0.0010	<0.0010		
Guideline Values	Sum of Total PFOS + PFHxS	PFOA	Total PFOS		
Drinking Water <sup>1</sup>	0.07 μg/L	0.56 μg/L	-		
Ecological Freshwater Guideline 95% ecosystem protection <sup>2</sup>	-	220 μg/L <sup>2</sup>	0.48 μg/L <sup>3</sup>		
Ecological Freshwater Guideline 99% ecosystem protection <sup>2</sup>	-	19 μg/L <sup>2</sup>	0.0091 μg/L <sup>3</sup>		

#### Notes:

- 1. Water Services (Drinking Water Standards for New Zealand) Regulations 2022 (June 2022).
- 2. Australian and New Zealand Guidelines for Fresh and Marine Water Quality technical draft guideline values as reproduced in PFAS National Environmental Management Plan Version 2.0 Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.
- ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.



For the April 2024 monitoring round a total of 18 groundwater samples were collected. The analytical results are summarised as follows:

- The Sum of Total PFOS + PFHxS was reported above the NZ Drinking Water Standard of 0.07 μg/L at seven locations. These were: WS1 (0.24 μg/L), MW4 (1.6 μg/L), MW6 (4.4 μg/L), MW9 (1.4 μg/L), GW111.1 (0.22 μg/L), GW31 (0.12 μg/L) and GW112.1 (0.54 μg/L). None of these wells are currently used for drinking water supply.
- Total PFOS exceeded the ANZG for the protection of 99% of freshwater species (0.0091  $\mu$ g/L) in eight locations. These were: WS1 (0.055  $\mu$ g/L), MW4 (1.2  $\mu$ g/L), GW6 (0.014  $\mu$ g/L), MW6 (2.7  $\mu$ g/L), MW9 (0.71  $\mu$ g/L), GW111.1 (0.14  $\mu$ g/L), GW31 (0.045  $\mu$ g/L), and GW112.1 (0.24  $\mu$ g/L).
- Total PFOS samples exceeded the ANZG for the protection of 95% of freshwater species (0.48 μg/L) at three locations. These were: MW4 (1.2 μg/L), MW6 (2.7 μg/L) and MW9 (0.71 μg/L).
- : PFOA was below the selected guideline values for all groundwater samples.
- The core PFAS compounds were detected at concentrations above the laboratory limit of reporting (LOR) but below the relevant guideline values at one location WS2.
- The core PFAS compounds were not reported (i.e., below the laboratory LOR) at nine locations (GW111.2, GW111.3, GW53, GW65, GW106, GW107, GW108, GW109, and GW112.2). Note, there was a minor detection of PFPeA in GW111.2, this is discussed in more detail in Section 4.1.1.

#### 3.2.2 Surface Water

The results of the laboratory analyses for the core PFAS compounds in surface water samples collected in April 2024 are provided in Table 5. PFAS results from all sampling rounds, and for all compounds in the laboratory PFAS suite, are presented in Table E-2, Appendix E.

Table 5: Surface Water Monitoring Results (April 2024 Sampling Round)					
	Core P	FAS Compounds (µg/L)			
Location	Sum of Total PFOS + PFHxS	PFOA	Total PFOS		
SW4	0.012	0.0038	0.010		
SW6		not sampled			
SW33	0.23	0.030	0.14		
SW36	0.036	0.0067	0.017		
Guideline Values	Sum of Total PFOS + PFHxS	PFOA	Total PFOS		
Ecological Freshwater Guideline 95% ecosystem protection <sup>1</sup>	-	220 μg/L <sup>1</sup>	0.48 μg/L <sup>2</sup>		
Ecological Freshwater Guideline 99% ecosystem protection <sup>1</sup>	-	19 μg/L <sup>1</sup>	0.0091 μg/L <sup>2</sup>		

#### Notes:

- Australian and New Zealand Guidelines for Fresh and Marine Water Quality technical draft guideline values as reproduced in PFAS National Environmental Management Plan Version 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.
- ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.



For the April 2024 monitoring round four surface water samples were collected. The analytical results are summarised as follows:

- SW6 was unable to be sampled as the drain was dry at the time of the investigation.
- SW4, SW33 and SW36 reported concentrations of total PFOS above the ANZG for the protection of 99% of freshwater species.
- No surface water samples exceed the 95% species protection scenario for total PFOS.
- : No surface water samples exceeded the 95% or 99% protection scenario for PFOA.

#### 3.3 Quality Assurance/Quality Control Programme

To determine the precision of the sampling and laboratory analysis, the similarity between the laboratory duplicates and blind field duplicate samples was quantified by calculating the Relative Percent Difference (%RPD) for each individual parameter detected in both the primary and duplicate samples. It is important to recognise that the results are from the laboratory analysis of chemicals that are present at very low concentrations and as such, the variation in the results may be attributed in part to the analytical method rather than sample collection methodology. The results of the QA/QC assessment are presented in Appendix D, and a summary is provided below.

- \* %RPDs for the PFAS compounds in the field duplicates ranged from 0 to 18% which is within the acceptable %RPD for duplicate samples.
- No PFAS compounds were detected above the laboratory LOR in the field blank samples, the trip blank samples or the equipment rinsate blanks.
- The results of the QA/QC assessment meet the data quality objectives for the sampling programme.

#### 4.0 Discussion

#### 4.1 Groundwater

In general, PFAS concentrations for the April 2024 monitoring round are within the historical ranges previously recorded at these locations. Time series plots showing a comparison of the Sum of Total PFOS + PFHxS over time at select sampling locations are provided on Figure 3A.

# 4.1.1 On-base Monitoring Locations

With respect to previous monitoring at and downgradient of key PFAS source areas:

- Concentrations of the core PFAS compounds at GW6 have remained consistent with the previous monitoring round and are all within their historic ranges and well below the spike observed in the April 2023 monitoring round.
- At MW6, concentrations of the core PFAS compounds have shown a continual decreasing trend. Concentrations at this location are the lowest recorded to date.
- At MW9, concentrations of the core PFAS compounds are similar to or lower than those observed in previous monitoring rounds.
- : At WS2 and MW4, concentrations of the core PFAS compounds remain within their historical ranges.
- At WS1, concentrations of the core PFAS compounds have shown a gradual increasing trend over the last 4-5 monitoring rounds. The current concentrations are the highest recorded to date.



- This was the seventh monitoring round at GW111.1 and GW111.3 and the eighth round at GW111.2.
  - Concentrations of the core PFAS compounds at GW111.1 have remained consistent with the results from the November 2023 monitoring round and are all within their historic ranges.
  - A minor detection of PFPeA was reported in GW111.2. This is the second time this compound
    has been detected in GW111.2 (minor detections of PFPeA and PFHxA were reported in the
    November 2023 sample). No other PFAS compounds were detected during the April 2024
    round.
  - All PFAS compounds in GW111.3 were reported below the LOR, which is in agreement with the predicted groundwater conditions at this location. This is consistent with the previous three monitoring rounds.

#### 4.1.2 Off-base Monitoring Locations

Wells GW31, GW112.1 and GW112.2 are located within the main plume approximately 1 km downgradient of the base:

- At GW31, the Sum of Total PFOS and PFHxS was reported above the drinking water standard and is slightly higher than the previous two monitoring rounds, but the results are considered to be consistent with historical results, except September 2022 when all PFAS compounds were reported below the LOR. The result from the September 2022 monitoring round was unexpected but was likely a result of the landowner switching to the new Sanson reticulated water supply prior to sampling.
- : This was the seventh monitoring round at GW112.1 and GW112.2.
  - In the shallow well GW112.1 (screened from 3.5 to 9.5 m bgl), the core PFAS compounds have remained consistent with the results from the November 2023 monitoring round and are all within their historical ranges.
  - PFAS compounds in GW112.2 were all reported below the LOR. This is consistent with the results from the last five sampling rounds, and further confirms the theory that the anomalous sample results in March 2021 were likely the result of the inadvertent switching of samples GW112.1 and GW112.2 either in the field or in the laboratory.

Wells GW106, GW108 and GW109 have been installed downgradient of the main plume to monitor plume migration. The plume is predicted to approach and then encompass these wells into the future.

- No PFAS compounds have been reported in any monitoring rounds to date at GW106 and GW109.
- No PFAS compounds were reported in GW108 during the April 2024 monitoring round. Very low concentrations of PFBA have been reported in GW108 in March 2021, March 2022 and November 2023.

Wells GW53, GW65 and GW107 are sampled to monitor lateral plume extent:

- : At GW53, GW65 and GW107 no PFAS has been reported in any monitoring rounds to date.
- As noted in Section 2.2, sample GW67 was not collected as the groundwater bore has been decommissioned.



A comparison of the sampling results to the PFAS groundwater model (PDP, 2019) developed for the area continues to show relatively good agreement. The April 2024 results agree with the model prediction for GW106 (no PFAS detected); GW112 (PFAS present in the shallow aquifer but not the deeper aquifers) and GW111, (PFAS present in the shallow aquifer but not the deeper aquifer). The data from the level loggers installed in the nested wells shows the deeper aquifer has a greater hydraulic head compared to the shallow aquifer which indicates there is an upward hydraulic gradient. This was an assumption of the PFAS groundwater model and would act to limit the migration of any PFAS compounds present in the shallow groundwater down into the deeper aquifer. It is important to note here however, that groundwater abstraction (e.g., for irrigation) could create localised areas of downward hydraulic gradient.

No obvious seasonal or rainfall induced patterns in PFAS concentrations at groundwater sampling locations are evident to date.

#### 4.1.3 Transect

A comparison of select PFAS concentrations along a transect running northeast – southwest from the Base to GW106 has been undertaken. This direction generally follows the predicted shallow groundwater flow path<sup>4</sup>. Figure 4 shows the location of the transect A-A' and provides a plot showing the change in concentration of the sum of PFOS + PFHxS at select wells in the vicinity of this transect. The transect commences at GW67<sup>5</sup> which is immediately up hydraulic gradient from the Base, then passes through the fire training area (MW4, cross and downgradient WS1), the shallow wells GW111.1 and GW112.1 before terminating at GW106. The last eight rounds of sampling are shown (note that there are only seven rounds of data for GW106, GW111.1 and GW112.1 and GW67<sup>5</sup>). As expected, the plot shows the concentration of the sum of PFOS + PFHxS generally decreases with distance away from the Base.

### 4.2 Surface Water

A comparison of the concentration of total PFOS over time at select surface water sampling locations is provided on Figure 3B. Depending on the environment at the sample location, the ANZG for the protection of 95% or 99% of freshwater species is shown on the time series plots. Thus, at SW6 which is a stormwater drain, the 95% draft DGV is shown. At all other locations the 99% draft DGV is shown.

At SW33, the concentration of Total PFOS for the April 2024 round (0.14  $\mu$ g/L) is the highest recorded concentration since monitoring began. The concentrations of other PFAS compounds in the sample collected from SW33 have also increased relative to recent monitoring rounds and are at or close to the highest levels recorded at this location. Total PFOS has been increasing since March 2022.

The concentrations of the core PFAS compounds in the sample collected from SW36 in April 2024 have decreased relative to recent monitoring rounds and are approaching the lowest recorded concentrations for this location which were reported in March 2022. The March 2021 monitoring round was the first time PFAS compounds were detected at this location.

At SW4, the core PFAS compounds have increased relative to recent monitoring rounds. The concentration of Total PFOS recorded during the April 2024 sampling round is the highest concentration recorded at this location and exceeds the ANZG 99% draft DGV for Total PFOS. This is the first time a sample from SW4 has exceed this guideline value.

SW6 was not able to be sampled during the April 2024 monitoring round as the stream was dry at the time of sampling.

<sup>&</sup>lt;sup>4</sup> It is important to keep in mind that the exact groundwater flow path is unknown and is likely to change seasonally depending on hydrologic conditions.

<sup>&</sup>lt;sup>5</sup> GW67 was unable to be sampled during the current round as the groundwater bore has been decommissioned.



The results from the April 2024 surface water sampling round are generally in agreement with those predicted by the PFAS groundwater model. Comparing the results of Total PFOS in SW36, there is a potential pattern emerging of higher concentrations being recorded in spring compared to autumn. No obvious seasonal or rainfall induced patterns in PFAS concentrations at the other surface water sample locations are evident to date.

# 5.0 Summary and Recommendations

Monitoring for per- and poly-fluoroalkyl substances (PFAS) in groundwater and surface water was conducted between 9 and 11 April 2024 in accordance with the RNZAF Base Ohakea PFAS Investigation: Long Term Monitoring Plan (PDP, 2020a). Eighteen groundwater and three surface water samples were collected from locations on, and adjacent to the base. In summary:

- The results from the April 2024 monitoring round are generally consistent with the results from previous monitoring rounds.
- PFOS was detected above the applicable guideline values in all three downgradient surface water samples and concentrations of PFOS were the highest recorded at SW4 and SW33. The reason(s) for the increases are unknown however as this is the first time PFOS has been recorded at these levels and concentrations have fluctuated in these locations historically, no additional follow up is recommended at this stage. If future results indicate an increasing trend, then this will be reassessed.
- PFAS has been detected at concentrations above the guideline values in eight groundwater samples collected in April 2024:
  - Two off-base groundwater samples (GW31 and GW112.1) exceeded the NZ Drinking Water Standard (these wells are not currently being used for drinking water supply) and the ANZG ecological guideline value for the protection of freshwater species at the 99% level.
  - Six on-base groundwater samples (WS1, MW4, GW6, MW9, and GW111.1) exceeded the ANZG for the protection of freshwater species at the 99% level. Five of these samples (WS1, MW4, MW6, MW9, and GW111.1) also exceeded the NZ Drinking Water Standard (none of the wells are used for drinking water supply). Three of these samples (MW4, MW6, and MW9) also exceeded the ANZG for the protection of freshwater species at the 95% level.
- Concentrations of the core PFAS compounds at GW6 have remained consistent from the previous monitoring round and well below the spike observed in the April 2023 monitoring round.
- A minor detection of PFPeA was reported in the April 2024 sample from GW111.2. Minor detections of PFPeA and PFHxA were reported in the November 2023 sample from GW111.2. This was the first time these compounds have been detected in this location and it is uncertain if these detections are representative of the groundwater conditions.

The data retrieved from the level loggers installed in the nested wells continues to show that the deeper aquifer has a greater hydraulic head compared to the shallow aquifer indicating an upward hydraulic gradient. This was an assumption of the PFAS groundwater model and would act to limit downward migration of any PFAS compounds from the shallow groundwater into the deeper aquifer.

No changes to the LTMP are recommended at this time.



#### 6.0 References

- ANZG, 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality.

  <a href="https://www.waterquality.gov.au/anz-guidelines/guideline-values/default/water-quality-toxicants/search">https://www.waterquality.gov.au/anz-guidelines/guideline-values/default/water-quality-toxicants/search</a>
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- MfE, 2018. Sampling and Analysis of Per- and Poly-fluorinated Substances.
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- PDP, 2020a. RNZAF Base Ohakea PFAS Investigation: Long Term Monitoring Plan (LTMP). Pattle Delamore Partners (2020).
- PDP, 2020b. Ohakea: Surface Water and Groundwater Monitoring For PFAS, October 2020. Pattle Delamore Partners (2020).
- PDP, 2021. Ohakea: Surface Water and Groundwater Monitoring For PFAS, March 2021. Pattle Delamore Partners (2021).
- PDP, 2022a. Ohakea: Surface Water and Groundwater Monitoring For PFAS, October 2021.

  Pattle Delamore Partners (2022).
- PDP, 2022b. Ohakea: Surface Water and Groundwater Monitoring For PFAS, March 2022. Pattle Delamore Partners (2022).
- PDP, 2023a. *Ohakea: Surface Water and Groundwater Monitoring For PFAS, September 2022.*Pattle Delamore Partners (2023).
- PDP, 2023b. *Ohakea: Surface Water and Groundwater Monitoring For PFAS, April 2023*. Pattle Delamore Partners (2023).
- PDP, 2024. Ohakea: Surface Water and Groundwater Monitoring For PFAS, November 2023. Pattle Delamore Partners (2024).
- Water Services (Drinking Water Standards for New Zealand) Regulations 2022.



NEW ZEALAND DEFENCE FORCE AND HORIZONS REGIONAL COUNCIL - ÕHAKEA: SURFACE WATER AND

#### 7.0 Limitations

This report has been prepared by Pattle Delamore Partners Limited (PDP) on the basis of information provided by New Zealand Defence Force. PDP has not independently verified the provided information and has relied upon it being accurate and sufficient for use by PDP in preparing the report. PDP accepts no responsibility for errors or omissions in, or the currency or sufficiency of, the provided information.

This report has been prepared by PDP on the specific instructions of New Zealand Defence Force and Horizons Regional Council for the limited purposes described in the report. PDP accepts no liability if the report is used for a different purpose or if it is used or relied on by any other person. Any such use or reliance will be solely at their own risk.

This assessment is limited to collection and analysis of groundwater and surface water samples from discrete sampling locations. Interpretations of subsurface conditions, including contaminant concentrations, are not guaranteed at distance away from the specific points of sampling.

This document has been prepared based on the April 2024 sampling and analysis round and the results from laboratory analysis. The site conditions as described in this document have been interpreted from, and are subject to, this information and its limitations and accordingly PDP does not represent that its interpretation accurately represents the full site conditions.

The laboratory test results provide an approximation of the concentration of the tested analytes and are subject to the inherent limitations of the laboratory techniques used for the tests.

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Yours faithfully

**PATTLE DELAMORE PARTNERS LIMITED** 

Prepared by

Nathan van Maanen

**Environmental Scientist** 

Reviewed by

James Conway

Service Leader - Contaminated Land

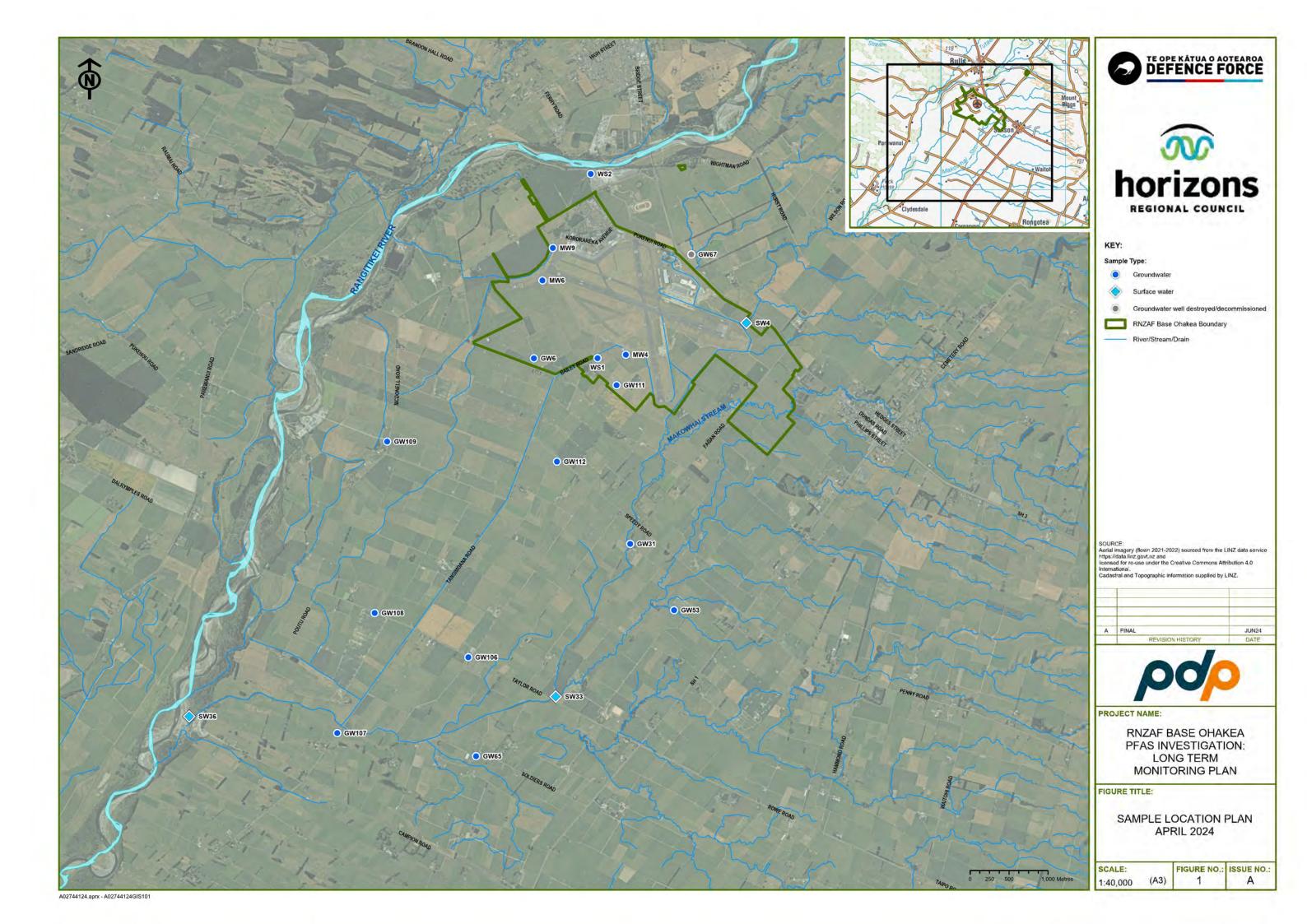
Approved by

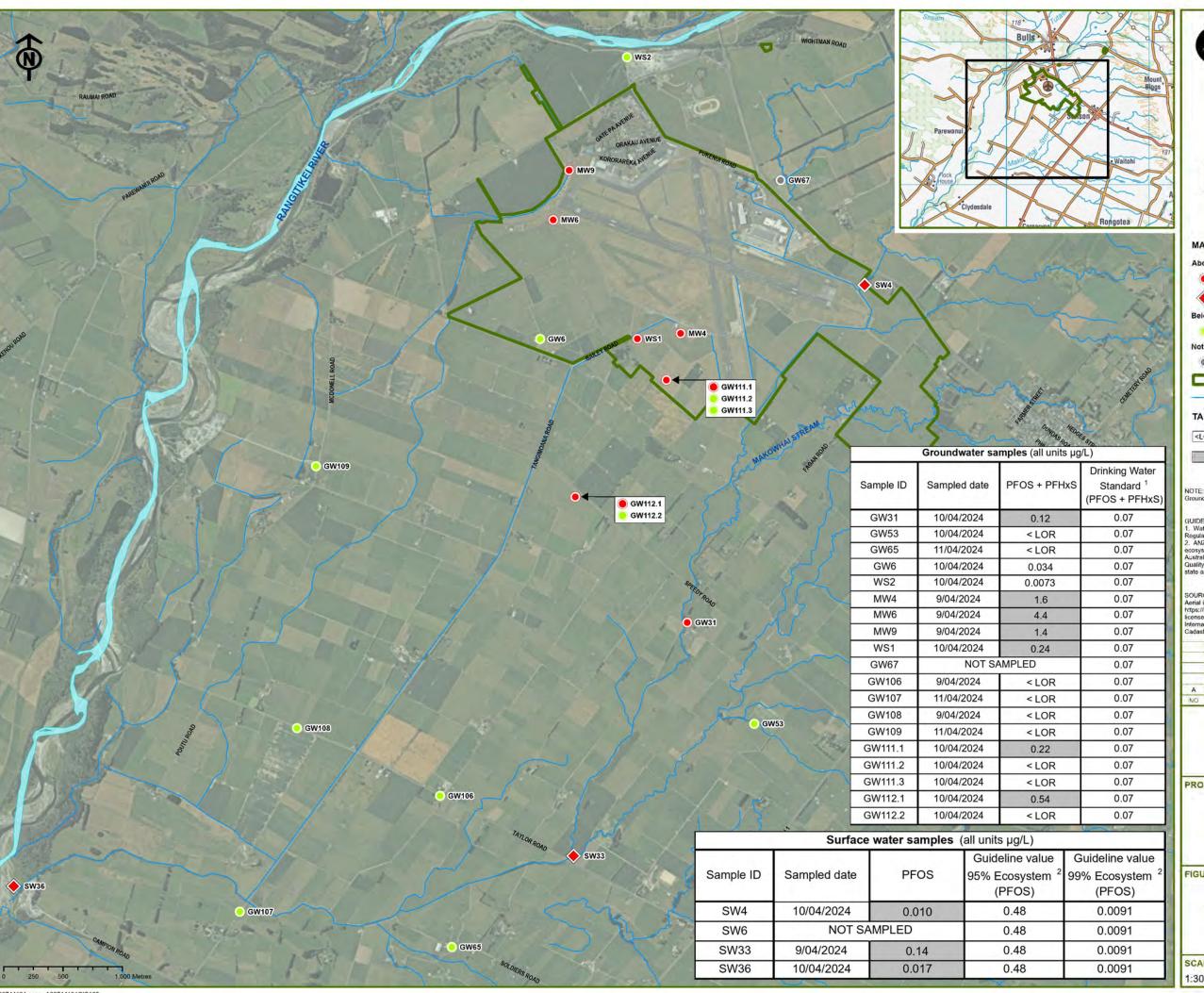
**Nerena Rhodes** 

Technical Director - Contaminated Land

Copy to: Dr Huma Saeed

Scientist - Groundwater Horizons Regional Council PALMERSTON NORTH









#### MAP KEY:

#### Above relevant guidelines:

Groundwater

Surface water

Below relevant guidelines

#### Not sampled

Groundwater well destroyed/decommissioned



- River/Stream/Drain

#### TABLE KEY:

Below laboratory limit of reporting

Concentration exceeds relevant

Guideline/Standard

roundwater wells are not currently used for drinking water supply

GUIDELINES USED:

1. Water Services (Drinking Water Standards for New Zealand)
Regulations 2022.

2. ANZG 2023, Toxicant default guideline values for aquatic
ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwate
Australian and New Zealand Guidelines for Fresh and Marine Water
Quality. Australian and New Zealand Governments and Australian
state and territory governments, Canberra, ACT, Australia.

SOURCE: Aerial imagery (flown 2021-2022) sourced from the LINZ data service https://data.inz.govt.nz and licensed for re-use under the Creative Commons Attribution 4.0

nternational. Cadastrel and Topographic information supplied by LINZ.

A	FINAL	JUN24
NO	REVISION HISTORY	DATE



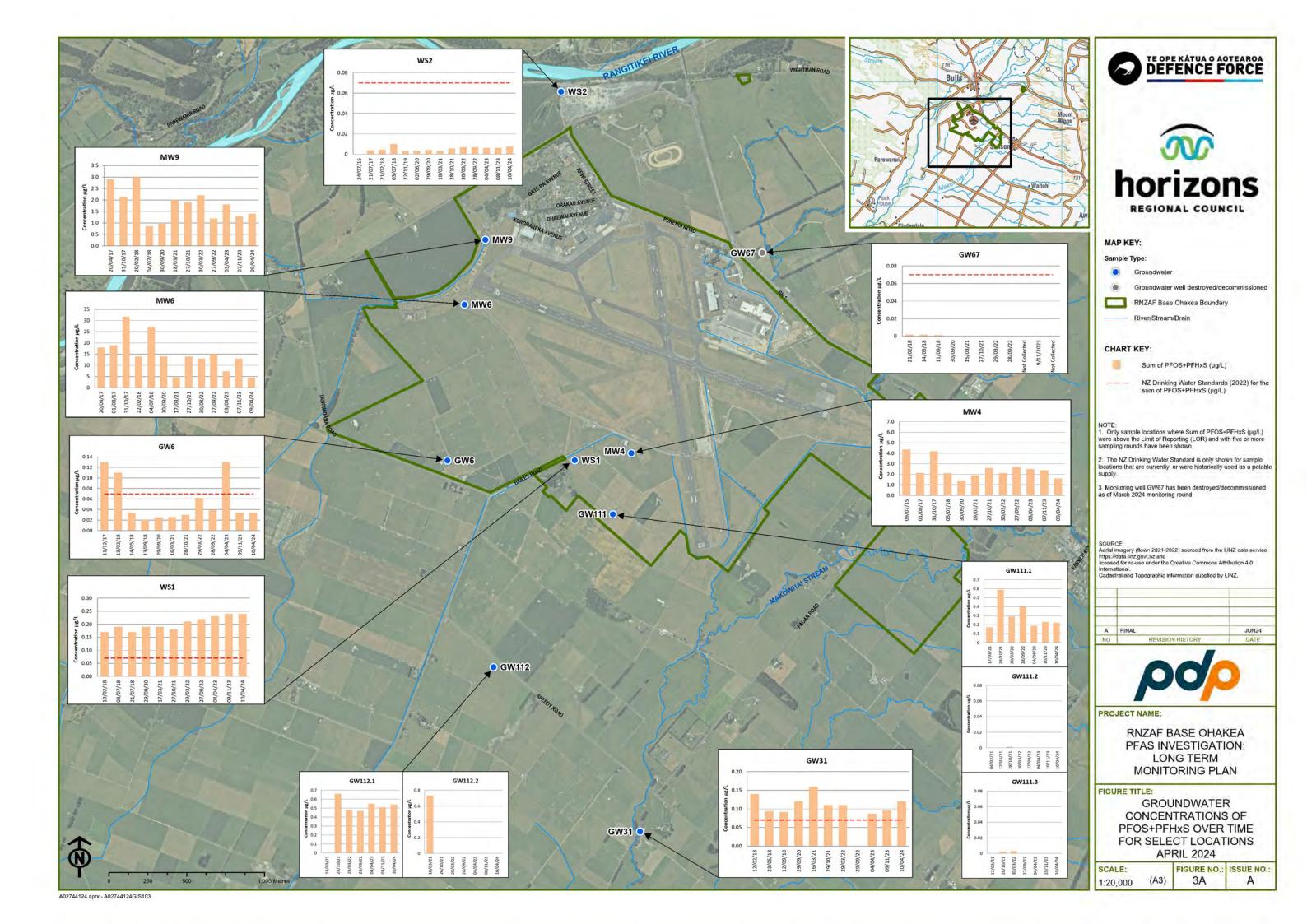
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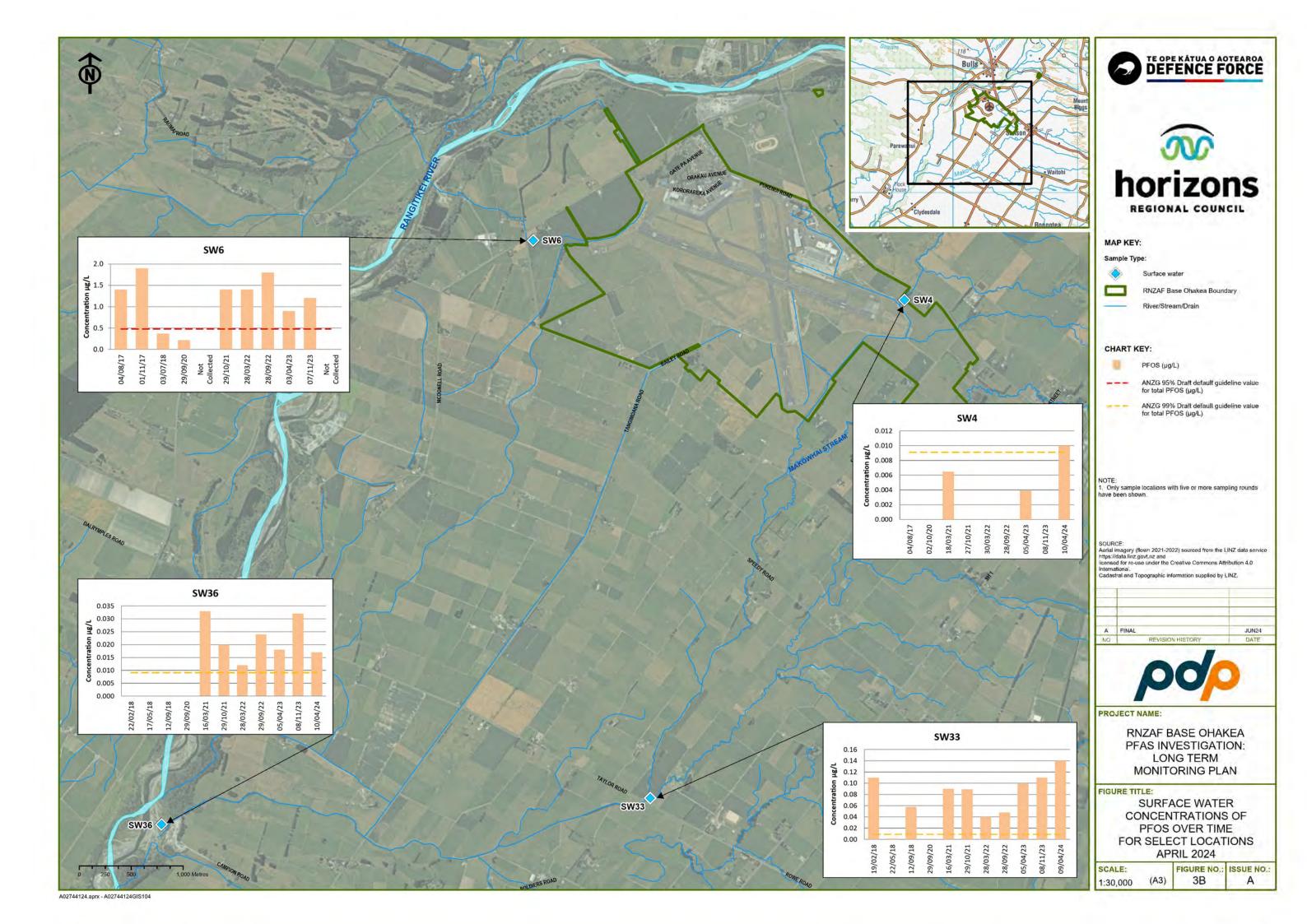
RNZAF BASE OHAKEA PFAS INVESTIGATION: LONG TERM MONITORING PLAN

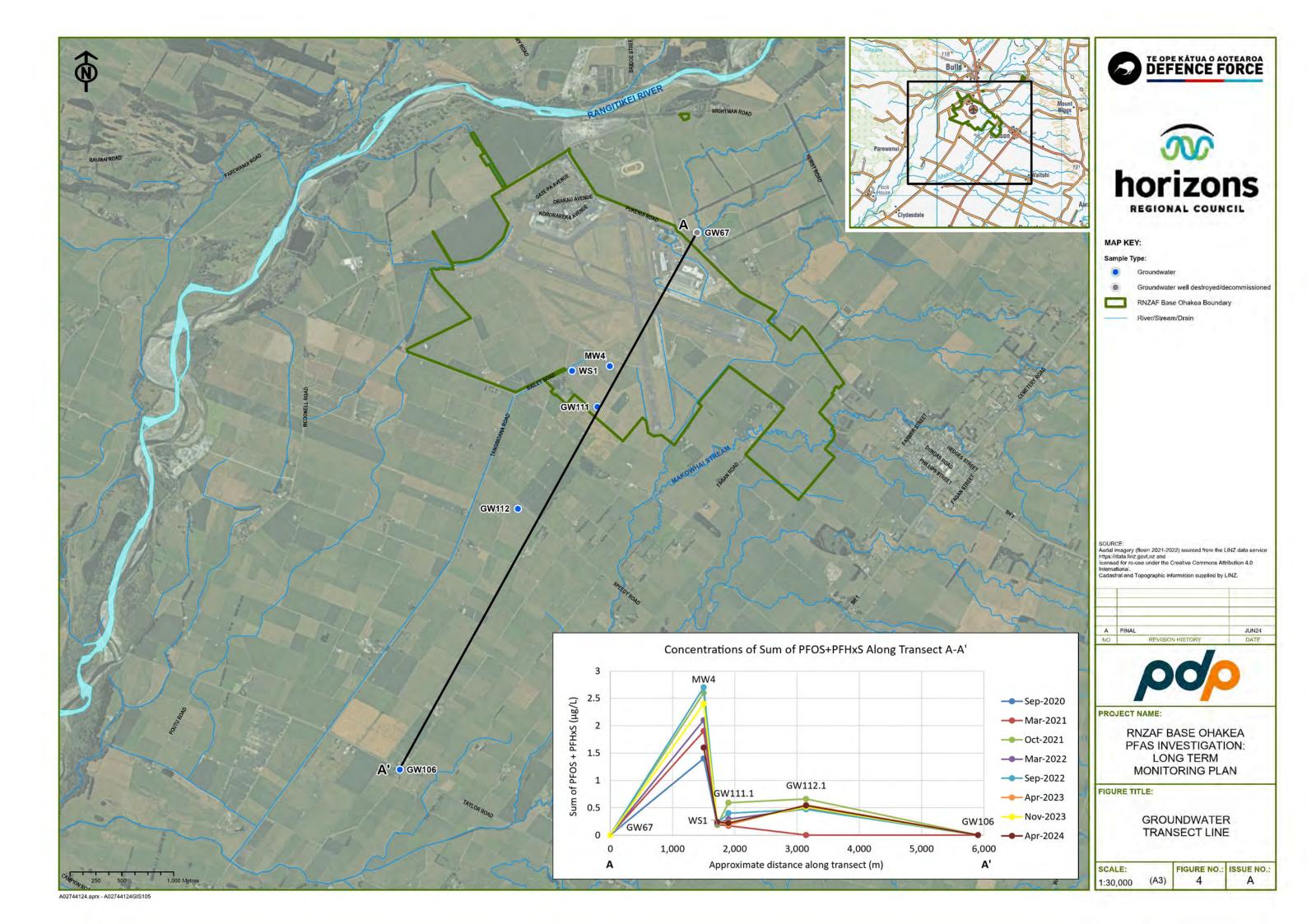
# FIGURE TITLE:

SAMPLE EXCEEDANCES **APRIL 2024** 

SCALE: FIGURE NO .: ISSUE NO .: (A3) 2 A 1:30,000









**Appendix A: Laboratory Results** 



# Certificate of Analysis

Submission Reference: A02744124

**Final Report** 

**NZDF ESDAT Pattle Delamore Partners Limited** P O Box 9528 Auckland 1149 **New Zealand** 

PO Number: OHA\_PFAS

Report Issued: 09-May-2024 Sample(s) Received: 12-Apr-2024 08:15 AsureQuality Reference: 24-103826

Testing Period: 15-Apr-2024 to 09-May-2024 Date of analysis is available on request.

# Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_GW6_10042	24		<b>Lab ID:</b> 24-103826-1					
Sample Condition: Acceptable	Sampled Date: 10-Apr-2024							
Test	Result	Unit	Method Reference					
Poly- and Perfluorinated Alkyl Substances (F	oly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water							
Perfluoroalkylsulfonic acids								
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)					
PFBS	0.0020	μg/L	AsureQuality Method (LC-MS/MS)					
PFPeS	0.0017	μg/L	AsureQuality Method (LC-MS/MS)					
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)					
mono-PFHxS (1)	0.0029	μg/L	AsureQuality Method (LC-MS/MS)					
L-PFHxS (1)	0.017	μg/L	AsureQuality Method (LC-MS/MS)					
Total PFHxS (3)	0.020	μg/L	AsureQuality Method (LC-MS/MS)					
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)					
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)					
mono-PFOS (5)	0.0077	μg/L	AsureQuality Method (LC-MS/MS)					
L-PFOS (5)	0.0066	μg/L	AsureQuality Method (LC-MS/MS)					
Total PFOS (7)	0.014	μg/L	AsureQuality Method (LC-MS/MS)					
Sum PFHxS+PFOS (1)	0.034	μg/L	AsureQuality Method (LC-MS/MS)					
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)					
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)					
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)					
Perfluoroalkylcarboxylic acids								
PFBA	0.011	μg/L	AsureQuality Method (LC-MS/MS)					
PFPeA	0.0078	μg/L	AsureQuality Method (LC-MS/MS)					
PFHxA	0.030	μg/L	AsureQuality Method (LC-MS/MS)					
PFHpA	0.0041	μg/L	AsureQuality Method (LC-MS/MS)					
PFOA	0.0036	μg/L	AsureQuality Method (LC-MS/MS)					
PFNA	0.0013	μg/L	AsureQuality Method (LC-MS/MS)					
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)					
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)					

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report: https://www.asurequality.com/about/terms-of-business/

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	NR	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	0.038	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	NR	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	127	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	93	%	AsureQuality Method (LC-MS/MS)
M8PFOS	103	%	AsureQuality Method (LC-MS/MS)
M4PFBA	62	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	61	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	87	%	AsureQuality Method (LC-MS/MS)
MPFHpA	78	%	AsureQuality Method (LC-MS/MS)
M8PFOA	81	%	AsureQuality Method (LC-MS/MS)
M9PFNA	68	%	AsureQuality Method (LC-MS/MS)
	87	%	
M6PFDA			AsureQuality Method (LC-MS/MS)
M7PFUnDA	103	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	325 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	1965 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	97	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	147	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	292 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	102	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	84	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	196 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	137	%	AsureQuality Method (LC-MS/MS)

Method Reference

Test

Test	Result	Unit	Method Reference
M4:2FTS	286 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	255 (R)	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	134	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	87	%	AsureQuality Method (LC-MS/MS)
R = Recovery outside method limits			
Customer Sample Name: OHA_GW6A_1004	424		<b>Lab ID:</b> 24-103826-
Sample Condition: Acceptable	Sampled Date: 10-Apr-2024		
Test	Result	Unit	Method Reference
oly- and Perfluorinated Alkyl Substances (F	PFAS) in Potable Water		
Perfluoroalkylsulfonic acids	·		
PFPrS	0.0093	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.026	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.022	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.035	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.15	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.18	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0027	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0035	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.025	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.011	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.040	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.22	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids		10	, , ,
PFBA	0.024	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.11	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.087	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.036	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.027	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0048	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides		10	, , ,
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

Result

Unit

Test	Result	Unit	Method Reference
Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.031	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	NR	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	NR	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	115	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	95	%	AsureQuality Method (LC-MS/MS)
M8PFOS	101	%	AsureQuality Method (LC-MS/MS)
M4PFBA	97	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	97	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	103	%	AsureQuality Method (LC-MS/MS)
MPFHpA	95	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	79	%	AsureQuality Method (LC-MS/MS)
M6PFDA	99	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	103	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	335 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	558 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	121	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	176 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	333 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	99	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	84	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	233 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	198 (R)	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	118	%	AsureQuality Method (LC-MS/MS)
	73		, ,
M8:2FTS		%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	103	%	AsureQuality Method (LC-MS/MS)
R = Recovery outside method limits			
Customer Sample Name: Duplicate of 24-103826-24			<b>Lab ID:</b> 24-103826-3
Sample Description: OHA_GW6A_100424 Duplicate			
Sample Condition: Acceptable	Sampled Date: 10-Apr-2024	l lmi4	Mothod Poterones
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in	Potable Water		
Perfluoroalkylsulfonic acids		P	A
PFPrS	0.0095	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.024	μg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
PFPeS	0.022	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.036	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.15	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.19	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0027	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0031	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.020	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.0084	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.032		
		μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.22	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.024	μg/L 	AsureQuality Method (LC-MS/MS)
PFPeA	0.11	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.087	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.037	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.028	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0045	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.032	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	NR	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	NR	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	119	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	94	%	AsureQuality Method (LC-MS/MS)
M8PFOS	110	%	AsureQuality Method (LC-MS/MS)
M4PFBA	96	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	101	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	101	%	AsureQuality Method (LC-MS/MS)
MPFHpA	94	%	AsureQuality Method (LC-MS/MS)
M8PFOA	98	%	AsureQuality Method (LC-MS/MS)
M9PFNA	80	%	AsureQuality Method (LC-MS/MS)
M6PFDA	106	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	110	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	293 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	867 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	146	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	169 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	224 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	78	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	362 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	247 (R)	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	112	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	75	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	100	%	AsureQuality Method (LC-MS/MS)
	* * * * * * * * * * * * * * * * * * * *	**	

R = Recovery outside method limits

# **QC** Results

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Relates to sample(s) 24-103826-1, 24-103826-2, 24-103826-3

- Test	Result	Unit	Method Reference	
Poly- and Perfluorinated Alkyl Substances (PFAS)	in Potable Water			
Perfluoroalkylsulfonic acids				
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	

Test	Result	Unit	Method Reference
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	NR	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	NR	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	100	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	100	%	AsureQuality Method (LC-MS/MS)
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)

AsureQuality Reference: 24-103826 Report Issued: 09-May-2024

Result	Unit	Method Reference
100	%	AsureQuality Method (LC-MS/MS)
100	%	AsureQuality Method (LC-MS/MS)
100	%	AsureQuality Method (LC-MS/MS)
100	%	AsureQuality Method (LC-MS/MS)
100	%	AsureQuality Method (LC-MS/MS)
100	%	AsureQuality Method (LC-MS/MS)
100	%	AsureQuality Method (LC-MS/MS)
100	%	AsureQuality Method (LC-MS/MS)
100	%	AsureQuality Method (LC-MS/MS)
100	%	AsureQuality Method (LC-MS/MS)
100	%	AsureQuality Method (LC-MS/MS)
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100	%	AsureQuality Method (LC-MS/MS)
100	%	AsureQuality Method (LC-MS/MS)
100	%	AsureQuality Method (LC-MS/MS)
100	%	AsureQuality Method (LC-MS/MS)
	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       %         100       %         100       %         100       %         100       %         100       %

# **Analysis Summary**

Wellington	Laboratory
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Analysis	Method	Accreditation	Authorised by
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
DX-PFCS01, 03-SUITE_B	AsureQuality Method (LC-MS/MS)	IANZ	Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

 $\hbox{L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)} \\$ 

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9CI-PF3ONS (F-53B major) and 11CI-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

**Amelie Sellier** 

Scientist

# Accreditation





Report Issued: 09-May-2024

# **Appendix**

# **Analyte LOR Summary**

Poly- and Perfluorinated Alkyl Substances (	PFAS) in Potable Water -	- AsureQuality Method (LC-MS/MS)

Poly- and Periluonnated Aikyi Substances (PPAS)	III Polable Water - AsureQuality Metriod (LC-M
Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 μg/L
PFBS	0.0010 μg/L
PFPeS	0.0010 μg/L
di-PFHxS (1)	0.0010 μg/L
mono-PFHxS (1)	0.0010 μg/L
L-PFHxS (1)	0.0010 μg/L
Total PFHxS (3)	0.0010 μg/L
PFHpS	0.0010 μg/L
di-PFOS (5)	0.0010 μg/L
mono-PFOS (5)	0.0010 μg/L
L-PFOS (5)	0.0010 μg/L
Total PFOS (7)	0.0010 μg/L
Sum PFHxS+PFOS (1)	0.0010 μg/L
PFNS	0.0010 μg/L
PFDS	NR μg/L
PFECHS	0.0010 μg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 μg/L
PFPeA	0.0010 μg/L
PFHxA	0.0010 μg/L
PFHpA	0.0010 μg/L
PFOA	0.0010 μg/L
PFNA	0.0010 μg/L
PFDA	0.0010 μg/L
PFUnDA	0.0010 μg/L
PFDoDA	0.0010 μg/L
PFTrDA	NR µg/L
PFTeDA	NR µg/L
P37DMOA	NR µg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 μg/L
NEtFOSA-M	NR µg/L
NMeFOSA-M	0.0010 μg/L
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 μg/L
NMeFOSAA	0.0010 μg/L
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	0.0010 μg/L
NMeFOSE-M	0.0010 μg/L
Telomere Sulfonic acids	
4:2 FTS	0.0010 μg/L
6:2 FTS	0.0010 μg/L
8:2 FTS	0.0010 μg/L
10:2 FTS	NR µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 μg/L
FPePA (5:3FTA)	0.0010 μg/L

FHpPA (7:3FTA)	NR μg/L
Miscellaneous	
F-53B (major)	0.0010 μg/L
F-53B (minor)	0.0010 μg/L
Sum F-53B	0.0010 μg/L
ADONA	0.0010 μg/L
HFPO-DA (GenX)	0.0010 μg/L

# **Analyte Definitions**

#### Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte Full Name

Perfluoroalkylsulfonic acids

PFPS Perfluoro-1-propanesulfonic acid
PFBS Perfluoro-1-butanesulfonic acid
PFPeS Perfluoro-1-pentanesulfonic acid

di-PFHxS (1)
Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)
Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)
Linear Perfluorohexanesulfonic acid
PFHpS
Perfluoro-1-heptanesulfonic acid

di-PFOS (5)

Total Perfluorodimethylhexane sulfonic acids mono-PFOS (5)

Total Perfluoromethylheptane sulfonic acids L-PFOS (5)

Linear Perfluoroctanesulfonic acid

PFNS

Perfluoro-1-nonanesulfonic acid

PFDS

Perfluoro-1-decanesulfonic acid

PFECHS Perfluoro-4-ethylcyclohexanesulfonic acid

Perfluoroalkylcarboxylic acids

PFBA Perfluoro-n-butanoic acid PFPeA Perfluoro-n-pentanoic acid PFHxA Perfluoro-n-hexanoic acid PFHpA Perfluoro-n-heptanoic acid PFOA Perfluoro-n-octanoic acid PFNA Perfluoro-n-nonanoic acid PFDA Perfluoro-n-decanoic acid PFUnDA Perfluoro-n-undecanoic acid PFDoDA Perfluoro-n-dodecanoic acid PFTrDA Perfluoro-n-tridecanoic acid PFTeDA Perfluoro-n-tetradecanoic acid P37DMOA Perfluoro-3,7-dimethyloctanoic acid

Perfluorooctanesulfonamides

PFOSA Perfluoro-1-octanesulfonamide

NEtFOSA-M N-ethylperfluoro-1-octanesulfonamide

NMeFOSA-M N-methylperfluoro-1-octanesulfonamide

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA N-methylperfluoro-1-octanesulfonamidoacetic acid

Perfluorooctanesulfonamidoethanols

 NEtFOSE-M
 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol

 NMeFOSE-M
 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

Telomere Sulfonic acids

4:2 FTS 1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS 1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS 1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS 1H,1H,2H,2H-perfluorododecanesulfonic acid

Telomere Carboxylic acids

FPrPA (3:3FTA) 3-Perfluoropropyl propanoic acid

AsureQuality Reference: 24-103826 Report Issued: 09-May-2024

AsureQuality Reference. 24-103626		Report Issueu. 09-May-2024
Analyte	Full Name	
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid	
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid	
Miscellaneous		
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	
F-53B (minor)	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	
Sum F-53B	Sum of F-53B components (major + minor)	
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid	
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid	
Internal Standards		
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid	
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid	
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid	
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid	
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid	
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid	
MPFHpA	Perfluoro-n-[-1,2,3,4-13C4]heptanoic acid	
M8PFOA	Perfluoro-n-[13C8]octanoic acid	
M9PFNA	Perfluoro-n-[13C9]nonanoic acid	
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid	
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid	
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid	
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid	
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide	
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide	
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide	
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid	
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid	
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol	
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol	
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid	
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid	
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid	
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid	
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid	

NR = Not Reportable

LOD = Limit of Detection

LOR = Limit of Reporting



# Certificate of Analysis

**Submission Reference: A02744125** 

**Final Report** 

**NZDF ESDAT Pattle Delamore Partners Limited** P O Box 9528 Auckland 1149 **New Zealand** 

PO Number: OHA\_PFAS

Report Issued: 09-May-2024 AsureQuality Reference: 24-103818 Sample(s) Received: 12-Apr-2024 08:15

Testing Period: 15-Apr-2024 to 09-May-2024 Date of analysis is available on request.

# Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_GW31_100424			<b>Lab ID:</b> 24-103818-1
Sample Condition: Acceptable	Sampled Date: 10-Apr-2024		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in	n Potable Water		
Perfluoroalkylsulfonic acids			
PFPrS	0.0037	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0099	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.0077	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.015	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.062	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.077	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0013	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0031	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.028	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.014	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.045	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.12	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.052	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.17	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.11	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.038	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.019	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0052	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report: https://www.asurequality.com/about/terms-of-business/

PFDLACM	Test	Result	Unit	Method Reference
PFTEDA         NR         µg/L         Asserbusity Method (LC-MS/MS)           PSTIMIOA         NR         µg/L         Asserbusity Method (LC-MS/MS)           PEPOSA          0.0010         µg/L         Asserbusity Method (LC-MS/MS)           NEEPOSA-M         NR         µg/L         Asserbusity Method (LC-MS/MS)           NMEFOSA-M          0.0010         µg/L         Asserbusity Method (LC-MS/MS)           Perfluorocotamoulforamidocedia caldia         NEEPOSA-M          0.0010         µg/L         Asserbusity Method (LC-MS/MS)           NMEFOSA          0.0010         µg/L         Asserbusity Method (LC-MS/MS)           SE2FIS          0.0010         µg/L         Asserbusity Method (LC-MS/MS)           8.2 FIS          0.0010         µg/L         Asserbusity Method (LC-MS/MS)           8.2 FIS	PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PSTONICA   NR	PFTrDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perboard         40.0010         µgt.         AsureCusity Method (LC MSMS)           NEFOSA.M         NR         µgt.         AsureCusity Method (LC MSMS)           NMEFOSA.M          0.0010         µgt.         AsureCusity Method (LC MSMS)           Perburococtaneutronamidocodta acids         NMEPOSA           AsureCusity Method (LC MSMS)           NMEFOSA          0.0010         µgt.         AsureCusity Method (LC MSMS)           Perburococtaneutronamidocombionamid	PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perboard         40.0010         µgt.         AsureCusity Method (LC MSMS)           NEFOSA.M         NR         µgt.         AsureCusity Method (LC MSMS)           NMEFOSA.M          0.0010         µgt.         AsureCusity Method (LC MSMS)           Perburococtaneutronamidocodta acids         NMEPOSA           AsureCusity Method (LC MSMS)           NMEFOSA          0.0010         µgt.         AsureCusity Method (LC MSMS)           Perburococtaneutronamidocombionamid	P37DMOA	NR	μg/L	AsureQuality Method (LC-MS/MS)
PEOSA	Perfluorooctanesulfonamides			
Number   N		<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoaceta acids   NEFOSAA   40.0010   µg/L   AsureQuality Method (LC-MS/MS)   NEFOSAA   40.0010   µg/L   AsureQuality Method (LC-MS/MS)   NEFOSE-M   40.0010   µg/L   AsureQuality Method (LC-MS/MS)   NEFOSE-MS/MS   NEFOSE-MS/MS   40.0010   µg/L   AsureQuality Method (LC-MS/MS)   NEFOSE-MS/MS   40.0010   µg/L   AsureQuality Method (LC-MS/MS)   NEFOSE-MS/MS/MS/MS/MS/MS/MS/MS/MS/MS/MS/MS/MS/M	NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NEIFOSAA	NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMEFOSAA	Perfluorooctanesulfonamidoacetic acids			
Perfluoroctanseulforamidoethanole	NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEIFOSE-M	NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Number OSE-M	Perfluorooctanesulfonamidoethanols			
Pathwere Sulfonic acids	NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
4.2 FTS   0.0010	NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6.2 FTS	Telomere Sulfonic acids			
Section   Part   Part	4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telemere Carboxylic acids   FPFPA (3.9TFA)   < 0.0010   μg/L   AsureQuality Method (LC-MS/MS)   FPFPA (3.9TFA)   < 0.0010   μg/L   AsureQuality Method (LC-MS/MS)   FPFPA (3.9TFA)   < 0.0010   μg/L   AsureQuality Method (LC-MS/MS)   FPFPA (7.9FTA)   NR   μg/L   AsureQuality Method (LC-MS/MS)   AsureQuality Method (LC-MS/MS)   MBCCELENCON   μg/L   AsureQuality Method (LC-MS/MS)   ADONA   < 0.0010   μg/L   AsureQuality Method (LC-MS/MS)   ADONA   < 0.0010   μg/L   AsureQuality Method (LC-MS/MS)   ADONA   < 0.0010   μg/L   AsureQuality Method (LC-MS/MS)   MFPPA   AsureQuality Method (LC-MS/MS)   MSPFHs   AsureQuality Method (LC-MS/MS)	6:2 FTS	0.0042	μg/L	AsureQuality Method (LC-MS/MS)
Flormere Carboxylic acides         Co.0010         μg/L         AsureQuality Method (LC-MS/MS)           FPPA (3.3FTA)         <0.0010	8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPIPA (3:3FTA)         < 0.0010         µg/L         AsureQuality Method (LC-MS/MS)           FPEPA (3:3FTA)         < 0.0010	10:2 FTS	NR	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (S:3FTA)         < 0.0010         μg/L         AsureQuality Method (LC-MS/MS)           FHSPA (7:3FTA)         NR         μg/L         AsureQuality Method (LC-MS/MS)           Miscolamosus           F-53B (major)         < 0.0020         μg/L         AsureQuality Method (LC-MS/MS)           F-53B (minor)         < 0.0010	Telomere Carboxylic acids			
FHPPA (7:3FTA)         NR         µg/L         AsureQuality Method (LC-Ms/Ms)           Miscellaneous         F-538 (major)         < 0.0020         µg/L         AsureQuality Method (LC-Ms/Ms)           F-538 (minor)         < 0.0010	FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
F-S3B (major)	FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (major)         < 0.0020         μg/L         AsureQuality Method (LC-MS/MS)           F-53B (minor)         < 0.0010	FHpPA (7:3FTA)	NR	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           Sum F-53B         <0.0020	Miscellaneous			
Sum F-53B         <0.0020         µg/L         AsureQuality Method (LC-MS/MS)           ADONA         <0.0010	F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           HFPO-DA (GenX)         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           Internal Standards         W         AsureQuality Method (LC-MS/MS)           M3PFBS         97         %         AsureQuality Method (LC-MS/MS)           M3PFHxS         80         %         AsureQuality Method (LC-MS/MS)           M8PFOS         95         %         AsureQuality Method (LC-MS/MS)           M4PFBA         79         %         AsureQuality Method (LC-MS/MS)           M5PFPA         78         %         AsureQuality Method (LC-MS/MS)           M5PFHxA         84         %         AsureQuality Method (LC-MS/MS)           M5PFHyA         85         %         AsureQuality Method (LC-MS/MS)           M6PFDA         91         %         AsureQuality Method (LC-MS/MS)           M6PFDA         92         %         AsureQuality Method (LC-MS/MS)           M7PFUNDA         99         %         AsureQuality Method (LC-MS/MS)           M7PFUDDA         99         %         AsureQuality Method (LC-MS/MS)           MPFODA         237 (R)         %         AsureQuality Method (LC-MS/MS)           MPFOSA         130         %	F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards         M3PFBS         97         %         AsureQuality Method (LC-MS/MS)           M3PFHxS         80         %         AsureQuality Method (LC-MS/MS)           M8PFOS         95         %         AsureQuality Method (LC-MS/MS)           M4PFBA         79         %         AsureQuality Method (LC-MS/MS)           M5PFPeA         78         %         AsureQuality Method (LC-MS/MS)           M5PFHxA         84         %         AsureQuality Method (LC-MS/MS)           M6PFDA         85         %         AsureQuality Method (LC-MS/MS)           M8PFOA         77         %         AsureQuality Method (LC-MS/MS)           M6PFDA         81         %         AsureQuality Method (LC-MS/MS)           M6PFDA         92         %         AsureQuality Method (LC-MS/MS)           M7PFUNDA         99         %         AsureQuality Method (LC-MS/MS)           MPFDDA         237 (R)         %         AsureQuality Method (LC-MS/MS)           MPFDDA         561 (R)         %         AsureQuality Method (LC-MS/MS)           MPFOSA         130         %         AsureQuality Method (LC-MS/MS)           DNMeFOSA         457 (R)         %         AsureQuality Method (LC-MS/MS)           DNMeFOSA	ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
M3PFBS         97         %         AsureQuality Method (LC-MS/MS)           M3PFHxS         80         %         AsureQuality Method (LC-MS/MS)           M8PFOS         95         %         AsureQuality Method (LC-MS/MS)           M4PFBA         79         %         AsureQuality Method (LC-MS/MS)           M5PFPA         78         %         AsureQuality Method (LC-MS/MS)           M5PFHxA         84         %         AsureQuality Method (LC-MS/MS)           M6PFDA         85         %         AsureQuality Method (LC-MS/MS)           M8PFOA         77         %         AsureQuality Method (LC-MS/MS)           M6PFDA         92         %         AsureQuality Method (LC-MS/MS)           M7PFUDDA         99         %         AsureQuality Method (LC-MS/MS)           MPFDDA         237 (R)         %         AsureQuality Method (LC-MS/MS)           MPFODA         561 (R)         %         AsureQuality Method (LC-MS/MS)           MPFOSA         130         %         AsureQuality Method (LC-MS/MS)           DNIEFOSA         457 (R)         %         AsureQuality Method (LC-MS/MS)           DNIEFOSA         104         %         AsureQuality Method (LC-MS/MS)           DNIEFOSA         104         A	HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
M3PFHxS         80         %         AsureQuality Method (LC-MS/MS)           M8PFOS         95         %         AsureQuality Method (LC-MS/MS)           M4PFBA         79         %         AsureQuality Method (LC-MS/MS)           M5PFPeA         78         %         AsureQuality Method (LC-MS/MS)           M5PFHxA         84         %         AsureQuality Method (LC-MS/MS)           M6PFDA         85         %         AsureQuality Method (LC-MS/MS)           M8PFOA         77         %         AsureQuality Method (LC-MS/MS)           M8PFDA         81         %         AsureQuality Method (LC-MS/MS)           M6PFDA         92         %         AsureQuality Method (LC-MS/MS)           M7PFUNDA         99         %         AsureQuality Method (LC-MS/MS)           MPFDODA         237 (R)         %         AsureQuality Method (LC-MS/MS)           MPFODA         561 (R)         %         AsureQuality Method (LC-MS/MS)           MPFOSA         130         %         AsureQuality Method (LC-MS/MS)           DNMeFOSA         457 (R)         %         AsureQuality Method (LC-MS/MS)           DNMeFOSAA         104         %         AsureQuality Method (LC-MS/MS)           DNMeFOSAA         87 <t< td=""><td>Internal Standards</td><td></td><td></td><td></td></t<>	Internal Standards			
M8PFOS         95         %         AsureQuality Method (LC-MS/MS)           M4PFBA         79         %         AsureQuality Method (LC-MS/MS)           M5PFPeA         78         %         AsureQuality Method (LC-MS/MS)           M5PFHxA         84         %         AsureQuality Method (LC-MS/MS)           MPFHpA         85         %         AsureQuality Method (LC-MS/MS)           M8PFOA         77         %         AsureQuality Method (LC-MS/MS)           M9PFNA         81         %         AsureQuality Method (LC-MS/MS)           M6PFDA         92         %         AsureQuality Method (LC-MS/MS)           M7PFUnDA         99         %         AsureQuality Method (LC-MS/MS)           MPFDDA         237 (R)         %         AsureQuality Method (LC-MS/MS)           MPFOSA         130         %         AsureQuality Method (LC-MS/MS)           DNIEFOSA         457 (R)         %         AsureQuality Method (LC-MS/MS)           DNMEFOSAA         104         %         AsureQuality Method (LC-MS/MS)           DNMEFOSAA         87         %         AsureQuality Method (LC-MS/MS)           DNMEFOSAA         276 (R)         %         AsureQuality Method (LC-MS/MS)	M3PFBS	97	%	AsureQuality Method (LC-MS/MS)
M4PFBA         79         %         AsureQuality Method (LC-MS/MS)           M5PFPeA         78         %         AsureQuality Method (LC-MS/MS)           M5PFHxA         84         %         AsureQuality Method (LC-MS/MS)           MPFHpA         85         %         AsureQuality Method (LC-MS/MS)           M8PFOA         77         %         AsureQuality Method (LC-MS/MS)           M9PFNA         81         %         AsureQuality Method (LC-MS/MS)           M6PFDA         92         %         AsureQuality Method (LC-MS/MS)           M7PFUNDA         99         %         AsureQuality Method (LC-MS/MS)           MPFDDA         237 (R)         %         AsureQuality Method (LC-MS/MS)           MPFTeDA         561 (R)         %         AsureQuality Method (LC-MS/MS)           MPFOSA         130         %         AsureQuality Method (LC-MS/MS)           DNEtFOSA         457 (R)         %         AsureQuality Method (LC-MS/MS)           DNMeFOSAA         104         %         AsureQuality Method (LC-MS/MS)           DNMeFOSAA         87         %         AsureQuality Method (LC-MS/MS)           DNMeFOSAA         87         %         AsureQuality Method (LC-MS/MS)           DNEtFOSE         276 (R)	M3PFHxS	80	%	AsureQuality Method (LC-MS/MS)
M5PFPeA         78         %         AsureQuality Method (LC-MS/MS)           M5PFHxA         84         %         AsureQuality Method (LC-MS/MS)           MPFHpA         85         %         AsureQuality Method (LC-MS/MS)           M8PFOA         77         %         AsureQuality Method (LC-MS/MS)           M9PFNA         81         %         AsureQuality Method (LC-MS/MS)           M6PFDA         92         %         AsureQuality Method (LC-MS/MS)           M7PFUNDA         99         %         AsureQuality Method (LC-MS/MS)           MPFDODA         237 (R)         %         AsureQuality Method (LC-MS/MS)           MPFTEDA         561 (R)         %         AsureQuality Method (LC-MS/MS)           MPFOSA         130         %         AsureQuality Method (LC-MS/MS)           DNEtFOSA         457 (R)         %         AsureQuality Method (LC-MS/MS)           DNEtFOSAA         104         %         AsureQuality Method (LC-MS/MS)           DNEtFOSE         276 (R)         %         AsureQuality Method (LC-MS/MS)	M8PFOS	95	%	AsureQuality Method (LC-MS/MS)
M5PFHxA         84         %         AsureQuality Method (LC-MS/MS)           MPFHpA         85         %         AsureQuality Method (LC-MS/MS)           M8PFOA         77         %         AsureQuality Method (LC-MS/MS)           M9PFNA         81         %         AsureQuality Method (LC-MS/MS)           M6PFDA         92         %         AsureQuality Method (LC-MS/MS)           M7PFUnDA         99         %         AsureQuality Method (LC-MS/MS)           MPFDoDA         237 (R)         %         AsureQuality Method (LC-MS/MS)           MPFTeDA         561 (R)         %         AsureQuality Method (LC-MS/MS)           MPFOSA         130         %         AsureQuality Method (LC-MS/MS)           DNEtFOSA         304 (R)         %         AsureQuality Method (LC-MS/MS)           DNEtFOSAA         104         %         AsureQuality Method (LC-MS/MS)           DNMeFOSAA         87         %         AsureQuality Method (LC-MS/MS)           DNEtFOSE         276 (R)         %         AsureQuality Method (LC-MS/MS)	M4PFBA	79	%	AsureQuality Method (LC-MS/MS)
MPFHpA         85         %         AsureQuality Method (LC-MS/MS)           M8PFOA         77         %         AsureQuality Method (LC-MS/MS)           M9PFNA         81         %         AsureQuality Method (LC-MS/MS)           M6PFDA         92         %         AsureQuality Method (LC-MS/MS)           M7PFUNDA         99         %         AsureQuality Method (LC-MS/MS)           MPFDODA         237 (R)         %         AsureQuality Method (LC-MS/MS)           MPFTeDA         561 (R)         %         AsureQuality Method (LC-MS/MS)           MPFOSA         130         %         AsureQuality Method (LC-MS/MS)           DNEtFOSA         304 (R)         %         AsureQuality Method (LC-MS/MS)           DNMeFOSA         457 (R)         %         AsureQuality Method (LC-MS/MS)           DNMeFOSAA         87         %         AsureQuality Method (LC-MS/MS)           DNEtFOSE         276 (R)         %         AsureQuality Method (LC-MS/MS)	M5PFPeA	78	%	AsureQuality Method (LC-MS/MS)
M8PFOA         77         %         AsureQuality Method (LC-MS/MS)           M9PFNA         81         %         AsureQuality Method (LC-MS/MS)           M6PFDA         92         %         AsureQuality Method (LC-MS/MS)           M7PFUnDA         99         %         AsureQuality Method (LC-MS/MS)           MPFDDA         237 (R)         %         AsureQuality Method (LC-MS/MS)           MPFTEDA         561 (R)         %         AsureQuality Method (LC-MS/MS)           MPFOSA         130         %         AsureQuality Method (LC-MS/MS)           DNEtFOSA         304 (R)         %         AsureQuality Method (LC-MS/MS)           DNMeFOSA         457 (R)         %         AsureQuality Method (LC-MS/MS)           DNMeFOSAA         104         %         AsureQuality Method (LC-MS/MS)           DNMeFOSAA         87         %         AsureQuality Method (LC-MS/MS)           DNEtFOSE         276 (R)         %         AsureQuality Method (LC-MS/MS)	M5PFHxA	84	%	AsureQuality Method (LC-MS/MS)
M8PFOA         77         %         AsureQuality Method (LC-MS/MS)           M9PFNA         81         %         AsureQuality Method (LC-MS/MS)           M6PFDA         92         %         AsureQuality Method (LC-MS/MS)           M7PFUnDA         99         %         AsureQuality Method (LC-MS/MS)           MPFDDA         237 (R)         %         AsureQuality Method (LC-MS/MS)           MPFTeDA         561 (R)         %         AsureQuality Method (LC-MS/MS)           MPFOSA         130         %         AsureQuality Method (LC-MS/MS)           DNEtFOSA         304 (R)         %         AsureQuality Method (LC-MS/MS)           DNMeFOSA         457 (R)         %         AsureQuality Method (LC-MS/MS)           DNMeFOSAA         104         %         AsureQuality Method (LC-MS/MS)           DNMeFOSAA         87         %         AsureQuality Method (LC-MS/MS)           DNEtFOSE         276 (R)         %         AsureQuality Method (LC-MS/MS)	MPFHpA	85	%	AsureQuality Method (LC-MS/MS)
M9PFNA         81         %         AsureQuality Method (LC-MS/MS)           M6PFDA         92         %         AsureQuality Method (LC-MS/MS)           M7PFUNDA         99         %         AsureQuality Method (LC-MS/MS)           MPFDoDA         237 (R)         %         AsureQuality Method (LC-MS/MS)           MPFTeDA         561 (R)         %         AsureQuality Method (LC-MS/MS)           MPFOSA         130         %         AsureQuality Method (LC-MS/MS)           DNEtFOSA         304 (R)         %         AsureQuality Method (LC-MS/MS)           DNMeFOSAA         457 (R)         %         AsureQuality Method (LC-MS/MS)           DNMeFOSAA         104         %         AsureQuality Method (LC-MS/MS)           DNMeFOSAA         87         %         AsureQuality Method (LC-MS/MS)           DNEtFOSE         276 (R)         %         AsureQuality Method (LC-MS/MS)	<u> </u>		%	
M6PFDA         92         %         AsureQuality Method (LC-MS/MS)           M7PFUnDA         99         %         AsureQuality Method (LC-MS/MS)           MPFDoDA         237 (R)         %         AsureQuality Method (LC-MS/MS)           MPFTeDA         561 (R)         %         AsureQuality Method (LC-MS/MS)           MPFOSA         130         %         AsureQuality Method (LC-MS/MS)           DNEtFOSA         304 (R)         %         AsureQuality Method (LC-MS/MS)           DNMeFOSA         457 (R)         %         AsureQuality Method (LC-MS/MS)           DNEtFOSAA         104         %         AsureQuality Method (LC-MS/MS)           DNMeFOSAA         87         %         AsureQuality Method (LC-MS/MS)           DNEtFOSE         276 (R)         %         AsureQuality Method (LC-MS/MS)				
M7PFUnDA         99         %         AsureQuality Method (LC-MS/MS)           MPFDoDA         237 (R)         %         AsureQuality Method (LC-MS/MS)           MPFTeDA         561 (R)         %         AsureQuality Method (LC-MS/MS)           MPFOSA         130         %         AsureQuality Method (LC-MS/MS)           DNEtFOSA         304 (R)         %         AsureQuality Method (LC-MS/MS)           DNMeFOSA         457 (R)         %         AsureQuality Method (LC-MS/MS)           DNEtFOSAA         104         %         AsureQuality Method (LC-MS/MS)           DNMeFOSAA         87         %         AsureQuality Method (LC-MS/MS)           DNEtFOSE         276 (R)         %         AsureQuality Method (LC-MS/MS)				
MPFDoDA         237 (R)         %         AsureQuality Method (LC-MS/MS)           MPFTeDA         561 (R)         %         AsureQuality Method (LC-MS/MS)           MPFOSA         130         %         AsureQuality Method (LC-MS/MS)           DNEtFOSA         304 (R)         %         AsureQuality Method (LC-MS/MS)           DNMeFOSA         457 (R)         %         AsureQuality Method (LC-MS/MS)           DNEtFOSAA         104         %         AsureQuality Method (LC-MS/MS)           DNMeFOSAA         87         %         AsureQuality Method (LC-MS/MS)           DNEtFOSE         276 (R)         %         AsureQuality Method (LC-MS/MS)				
MPFTeDA         561 (R)         %         AsureQuality Method (LC-MS/MS)           MPFOSA         130         %         AsureQuality Method (LC-MS/MS)           DNEtFOSA         304 (R)         %         AsureQuality Method (LC-MS/MS)           DNMeFOSA         457 (R)         %         AsureQuality Method (LC-MS/MS)           DNEtFOSAA         104         %         AsureQuality Method (LC-MS/MS)           DNMeFOSAA         87         %         AsureQuality Method (LC-MS/MS)           DNEtFOSE         276 (R)         %         AsureQuality Method (LC-MS/MS)				
MPFOSA         130         %         AsureQuality Method (LC-MS/MS)           DNEtFOSA         304 (R)         %         AsureQuality Method (LC-MS/MS)           DNMeFOSA         457 (R)         %         AsureQuality Method (LC-MS/MS)           DNEtFOSAA         104         %         AsureQuality Method (LC-MS/MS)           DNMeFOSAA         87         %         AsureQuality Method (LC-MS/MS)           DNEtFOSE         276 (R)         %         AsureQuality Method (LC-MS/MS)				
DNEtFOSA         304 (R)         %         AsureQuality Method (LC-MS/MS)           DNMeFOSA         457 (R)         %         AsureQuality Method (LC-MS/MS)           DNEtFOSAA         104         %         AsureQuality Method (LC-MS/MS)           DNMeFOSAA         87         %         AsureQuality Method (LC-MS/MS)           DNEtFOSE         276 (R)         %         AsureQuality Method (LC-MS/MS)				
DNMeFOSA         457 (R)         %         AsureQuality Method (LC-MS/MS)           DNEtFOSAA         104         %         AsureQuality Method (LC-MS/MS)           DNMeFOSAA         87         %         AsureQuality Method (LC-MS/MS)           DNEtFOSE         276 (R)         %         AsureQuality Method (LC-MS/MS)				
DNEtFOSAA 104 % AsureQuality Method (LC-MS/MS) DNMeFOSAA 87 % AsureQuality Method (LC-MS/MS) DNEtFOSE 276 (R) % AsureQuality Method (LC-MS/MS)				
DNMeFOSAA     87     %     AsureQuality Method (LC-MS/MS)       DNEtFOSE     276 (R)     %     AsureQuality Method (LC-MS/MS)				
DNEtFOSE 276 (R) % AsureQuality Method (LC-MS/MS)				
	DNMeFOSAA			AsureQuality Method (LC-MS/MS)
DNMeFOSE 228 (R) % AsureQuality Method (LC-MS/MS)	DNEtFOSE	276 (R)		AsureQuality Method (LC-MS/MS)
	DNMeFOSE	228 (R)	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	91	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	81	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	76	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	84	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

# **QC** Results

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Relates to sample(s) 24-103818-1

ates to sample(s) 24-103016-1			
st	Result	Unit	Method Reference
y- and Perfluorinated Alkyl Substances (PFAS) in Potable	e Water		
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			

rest	Result	Unit	Method Reference	
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Perfluorooctanesulfonamidoethanols				
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Telomere Sulfonic acids				
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
10:2 FTS	NR	μg/L	AsureQuality Method (LC-MS/MS)	
Telomere Carboxylic acids				
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
FHpPA (7:3FTA)	NR	μg/L	AsureQuality Method (LC-MS/MS)	
Miscellaneous				
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)	
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)	
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Internal Standards				
M3PFBS	100	%	AsureQuality Method (LC-MS/MS)	
M3PFHxS	100	%	AsureQuality Method (LC-MS/MS)	
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)	
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)	
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)	
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)	
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)	
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)	
M9PFNA	100	%	AsureQuality Method (LC-MS/MS)	
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)	
M7PFUnDA	100	%	AsureQuality Method (LC-MS/MS)	
MPFDoDA	100	%	AsureQuality Method (LC-MS/MS)	
MPFTeDA	100	%	AsureQuality Method (LC-MS/MS)	
MPFOSA	100	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSA	100	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSA	100	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSAA	100	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSAA	100	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSE	100	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSE	100	%	AsureQuality Method (LC-MS/MS)	
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)	
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)	
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)	
M3HFPO-DA	100	%	AsureQuality Method (LC-MS/MS)	
		/0	I I I I I I I I I I I I I I I I	

AsureQuality Reference: 24-103818 Report Issued: 09-May-2024

#### **Analysis Summary**

# **Wellington Laboratory**

Analysis Method Accreditation Authorised by

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water

DX-PFCS01, 03-SUITE\_B AsureQuality Method (LC-MS/MS) IANZ Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9CI-PF3ONS (F-53B major) and 11CI-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

Aller

**Amelie Sellier** 

Scientist

# **Accreditation**





Report Issued: 09-May-2024

# **Appendix**

# **Analyte LOR Summary**

Poly- and Perfluorinated Alkyl Substances	(PFAS) in Potable Water -	AsureQuality Method (LC-MS/MS)

1 ory and 1 ornaormatou / arty outotariood (1 1 / to)	
Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 μg/L
PFBS	0.0010 μg/L
PFPeS	0.0010 μg/L
di-PFHxS (1)	0.0010 μg/L
mono-PFHxS (1)	0.0010 μg/L
L-PFHxS (1)	0.0010 μg/L
Total PFHxS (3)	0.0010 μg/L
PFHpS	0.0010 μg/L
di-PFOS (5)	0.0010 μg/L
mono-PFOS (5)	0.0010 μg/L
L-PFOS (5)	0.0010 μg/L
Total PFOS (7)	0.0010 μg/L
Sum PFHxS+PFOS (1)	0.0010 μg/L
PFNS	0.0010 μg/L
PFDS	NR µg/L
PFECHS	0.0010 μg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 μg/L
PFPeA	0.0010 μg/L
PFHxA	0.0010 μg/L
PFHpA	0.0010 μg/L
PFOA	0.0010 μg/L
PFNA	0.0010 μg/L
PFDA	0.0010 μg/L
PFUnDA	0.0010 μg/L
PFDoDA	0.0010 μg/L
PFTrDA	NR µg/L
PFTeDA	NR µg/L
P37DMOA	NR µg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 μg/L
NEtFOSA-M	NR µg/L
NMeFOSA-M	0.0010 μg/L
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 μg/L
NMeFOSAA	0.0010 μg/L
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	0.0010 μg/L
NMeFOSE-M	0.0010 μg/L
Telomere Sulfonic acids	
4:2 FTS	0.0010 μg/L
6:2 FTS	0.0010 μg/L
8:2 FTS	0.0010 μg/L
10:2 FTS	NR µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 μg/L
FPePA (5:3FTA)	0.0010 μg/L

FHpPA (7:3FTA)	NR μg/L
Miscellaneous	
F-53B (major)	0.0010 μg/L
F-53B (minor)	0.0010 μg/L
Sum F-53B	0.0010 μg/L
ADONA	0.0010 μg/L
HFPO-DA (GenX)	0.0010 μg/L

#### **Analyte Definitions**

#### Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte Full Name

Perfluoroalkylsulfonic acids

PFPS Perfluoro-1-propanesulfonic acid
PFBS Perfluoro-1-butanesulfonic acid
PFPeS Perfluoro-1-pentanesulfonic acid

di-PFHxS (1)
Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)
Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)
Linear Perfluorohexanesulfonic acid
PFHpS
Perfluoro-1-heptanesulfonic acid

di-PFOS (5)

Total Perfluorodimethylhexane sulfonic acids mono-PFOS (5)

Total Perfluoromethylheptane sulfonic acids L-PFOS (5)

Linear Perfluoroctanesulfonic acid

PFNS

Perfluoro-1-nonanesulfonic acid

PFDS

Perfluoro-1-decanesulfonic acid

PFECHS Perfluoro-4-ethylcyclohexanesulfonic acid

Perfluoroalkylcarboxylic acids

PFBA Perfluoro-n-butanoic acid PFPeA Perfluoro-n-pentanoic acid PFHxA Perfluoro-n-hexanoic acid PFHpA Perfluoro-n-heptanoic acid PFOA Perfluoro-n-octanoic acid PFNA Perfluoro-n-nonanoic acid PFDA Perfluoro-n-decanoic acid PFUnDA Perfluoro-n-undecanoic acid PFDoDA Perfluoro-n-dodecanoic acid PFTrDA Perfluoro-n-tridecanoic acid PFTeDA Perfluoro-n-tetradecanoic acid P37DMOA Perfluoro-3,7-dimethyloctanoic acid

Perfluorooctanesulfonamides

PFOSA Perfluoro-1-octanesulfonamide

NEtFOSA-M N-ethylperfluoro-1-octanesulfonamide

NMeFOSA-M N-methylperfluoro-1-octanesulfonamide

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA N-methylperfluoro-1-octanesulfonamidoacetic acid

Perfluorooctanesulfonamidoethanols

 NEtFOSE-M
 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol

 NMeFOSE-M
 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

Telomere Sulfonic acids

4:2 FTS1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid6:2 FTS1H,1H,2H,2H-perfluoro-1-octanesulfonic acid8:2 FTS1H,1H,2H,2H-perfluoro-1-decanesulfonic acid10:2 FTS1H,1H,2H,2H-perfluorododecanesulfonic acid

Telomere Carboxylic acids

FPrPA (3:3FTA) 3-Perfluoropropyl propanoic acid

AsureQuality Reference: 24-103818 Report Issued: 09-May-2024

AsureQuality Reference: 24	-103818	Report Issued: 09-May-2024
Analyte	Full Name	
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid	
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid	
Miscellaneous		
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	
F-53B (minor)	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	
Sum F-53B	Sum of F-53B components (major + minor)	
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid	
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid	
Internal Standards		
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid	
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid	
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid	
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid	
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid	
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid	
MPFHpA	Perfluoro-n-[-1,2,3,4-13C4]heptanoic acid	
M8PFOA	Perfluoro-n-[13C8]octanoic acid	
M9PFNA	Perfluoro-n-[13C9]nonanoic acid	
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid	
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid	
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid	
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid	
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide	
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide	
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide	
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid	
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid	
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol	
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol	
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid	
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid	
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid	
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid	

NR = Not Reportable

LOD = Limit of Detection

LOR = Limit of Reporting



# Certificate of Analysis

**Submission Reference: A02744125** 

**Final Report** 

**NZDF ESDAT Pattle Delamore Partners Limited** P O Box 9528 Auckland 1149 **New Zealand** 

PO Number: OHA\_PFAS

Report Issued: 09-May-2024 Sample(s) Received: 12-Apr-2024 08:15 AsureQuality Reference: 24-103815

Testing Period: 15-Apr-2024 to 09-May-2024 Date of analysis is available on request.

# Results

Report Number: 3749198

The tests were performed on the samples as received.

Sample Condition: Acceptable         Sampled Date: 10-Apr-2024           Test         Result         Unit         Method Reference           Poby-and Perfluorinated Alkyl Substanose (PFAS) in Potable Water         Perfluorally Sulfonic acids           PFPPS         < 0.0010	Customer Sample Name: OHA_GW53_1004	124		<b>Lab ID:</b> 24-103815-1
Perfluoroalky/sulfonic acids           PEPFS         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           PEPS         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           PFPS         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           PFPS         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           di-PFHxS (1)         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           L-PFHxS (1)         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           L-PFHxS (1)         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           PFHpS         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           J-PFHxS (3)         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           J-PFDS (5)         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           J-PFOS (5)         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           J-PFOS (7)         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           J-PFNS         <0.0020         µg/L         AsureQuality Method (LC-MS/MS)           J-PFDS         NR         µg/L         AsureQuality Method (LC-MS/MS)	Sample Condition: Acceptable	Sampled Date: 10-Apr-2024		
Perfluoroalky/sulfonic acids         Co.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFBS         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFBS         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           di-PFHxS (1)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           mono-PFHxS (1)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           L-PFHxS (1)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           Total PFHxS (3)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFHpS         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           di-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           mono-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           L-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           Total PFOS (7)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           Sum PFHxS+PFOS (1)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFDS         <0.0020         μg/L         AsureQuality Method (LC-MS/MS)           PFEA	Test	Result	Unit	Method Reference
PFPrS	Poly- and Perfluorinated Alkyl Substances (F	PFAS) in Potable Water		
PFBS	Perfluoroalkylsulfonic acids			
PFPeS         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           di-PFHxS (1)         <0.0010	PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
AsureQuality Method (LC-MS/MS)   Mono-PFHxS (1)   Mono-PFHxS (2)   Mono-PFHxS (3)   Mono-PFHXS (4)   Mono-PFTXS (4)   Mono-	PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)         <0.0010	PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)   <0.0010   µg/L   AsureQuality Method (LC-MS/MS)	mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           mono-PFOS (5)         <0.0010	Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           L-PFOS (5)         <0.0010	PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           Sum PFHxS+PFOS (1)         <0.0010	mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)         <0.0010	L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS         <0.0020         μg/L         AsureQuality Method (LC-MS/MS)           PFDS         NR         μg/L         AsureQuality Method (LC-MS/MS)           PFECHS         <0.0020	Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDS         NR         μg/L         AsureQuality Method (LC-MS/MS)           PFECHS         <0.0020         μg/L         AsureQuality Method (LC-MS/MS)           Perfluoroalkylcarboxylic acids           PFBA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFPeA         <0.0010	Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS         <0.0020         μg/L         AsureQuality Method (LC-MS/MS)           Perfluoroalkylcarboxylic acids           PFBA         <0.0010	PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids           PFBA         <0.0010	PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFBA         <0.0010	PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFHxA         <0.0010	Perfluoroalkylcarboxylic acids			
PFHxA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFHpA         <0.0010	PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFOA         <0.0010	PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFNA         <0.0010	PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFDA         <0.0010	PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA <0.0010 µg/L AsureQuality Method (LC-MS/MS)	PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
	PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA <0.0010 μg/L AsureQuality Method (LC-MS/MS)	PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
	PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report: https://www.asurequality.com/about/terms-of-business/

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			· · · · · · ·
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			· · · · · · · · · · · · · · · · · · ·
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	NR	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	NR	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			· · · · · · · · · · · · · · · · · · ·
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards		10	, , , , , , , , , , , , , , , , , , , ,
M3PFBS	99	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	88	%	AsureQuality Method (LC-MS/MS)
M8PFOS	97	%	AsureQuality Method (LC-MS/MS)
M4PFBA	92	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	88	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	85	%	AsureQuality Method (LC-MS/MS)
MPFHpA	86	%	AsureQuality Method (LC-MS/MS)
M8PFOA	83	%	AsureQuality Method (LC-MS/MS)
M9PFNA	91	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	98	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	123	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	51	%	AsureQuality Method (LC-MS/MS)
MPFOSA	123	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	62	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	124	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	66	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	72	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	161 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	152 (R)	%	AsureQuality Method (LC-MS/MS)
			· · · · · · · · · · · · · · · · · · ·

Test	Result	Unit	Method Reference
M4:2FTS	98	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	98	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	86	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	92	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

# **QC** Results

R	lan	Ŀ

Relates to sample(s) 24-103815-1

est	Result	Unit	Method Reference
oly- and Perfluorinated Alkyl Substances (PFAS) in Pota	able Water		
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

Test Test	Result	Unit	Method Reference	
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Perfluorooctanesulfonamidoethanols				
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Telomere Sulfonic acids		, ,		
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
10:2 FTS	NR	μg/L	AsureQuality Method (LC-MS/MS)	
Telomere Carboxylic acids				
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
FHpPA (7:3FTA)	NR	μg/L	AsureQuality Method (LC-MS/MS)	
Miscellaneous				
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)	
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)	
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Internal Standards				
M3PFBS	100	%	AsureQuality Method (LC-MS/MS)	
M3PFHxS	100	%	AsureQuality Method (LC-MS/MS)	
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)	
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)	
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)	
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)	
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)	
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)	
M9PFNA	100	%	AsureQuality Method (LC-MS/MS)	
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)	
M7PFUnDA	100	%	AsureQuality Method (LC-MS/MS)	
MPFDoDA	100	%	AsureQuality Method (LC-MS/MS)	
MPFTeDA	100	%	AsureQuality Method (LC-MS/MS)	
MPFOSA	100	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSA	100	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSA	100	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSAA	100	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSAA	100	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSE	100	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSE	100	%	AsureQuality Method (LC-MS/MS)	
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)	
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)	
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)	
M3HFPO-DA	100	%	AsureQuality Method (LC-MS/MS)	

AsureQuality Reference: 24-103815 Report Issued: 09-May-2024

#### **Analysis Summary**

## **Wellington Laboratory**

Analysis Method Accreditation Authorised by

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water

DX-PFCS01, 03-SUITE\_B AsureQuality Method (LC-MS/MS) IANZ Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9CI-PF3ONS (F-53B major) and 11CI-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

Allan

**Amelie Sellier** 

Scientist

# **Accreditation**





Report Issued: 09-May-2024

# **Appendix**

# **Analyte LOR Summary**

Poly- and Perfluoringted	Alkyl Substances (PFAS	:\ in Potable Water -	AsureQuality Method (LC-MS/MS)

roly and rollidollilatod ruly roubolatiood (17710)	, in a classic trater a real cadality medica (EC mem
Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 μg/L
PFBS	0.0010 μg/L
PFPeS	0.0010 μg/L
di-PFHxS (1)	0.0010 μg/L
mono-PFHxS (1)	0.0010 μg/L
L-PFHxS (1)	0.0010 μg/L
Total PFHxS (3)	0.0010 μg/L
PFHpS	0.0010 μg/L
di-PFOS (5)	0.0010 μg/L
mono-PFOS (5)	0.0010 μg/L
L-PFOS (5)	0.0010 μg/L
Total PFOS (7)	0.0010 μg/L
Sum PFHxS+PFOS (1)	0.0010 μg/L
PFNS	0.0010 μg/L
PFDS	NR µg/L
PFECHS	0.0010 μg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 μg/L
PFPeA	0.0010 μg/L
PFHxA	0.0010 μg/L
PFHpA	0.0010 μg/L
PFOA	0.0010 μg/L
PFNA	0.0010 μg/L
PFDA	0.0010 μg/L
PFUnDA	0.0010 μg/L
PFDoDA	0.0010 μg/L
PFTrDA	NR µg/L
PFTeDA	NR µg/L
P37DMOA	NR µg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 μg/L
NEtFOSA-M	NR µg/L
NMeFOSA-M	0.0010 μg/L
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 μg/L
NMeFOSAA	0.0010 μg/L
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	0.0010 μg/L
NMeFOSE-M	0.0010 μg/L
Telomere Sulfonic acids	
4:2 FTS	0.0010 μg/L
6:2 FTS	0.0010 μg/L
8:2 FTS	0.0010 μg/L
10:2 FTS	NR µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 μg/L
FPePA (5:3FTA)	0.0010 μg/L

FHpPA (7:3FTA)	NR μg/L
Miscellaneous	
F-53B (major)	0.0010 μg/L
F-53B (minor)	0.0010 μg/L
Sum F-53B	0.0010 μg/L
ADONA	0.0010 μg/L
HFPO-DA (GenX)	0.0010 μg/L

#### **Analyte Definitions**

#### Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte Full Name

Perfluoroalkylsulfonic acids

PFPS Perfluoro-1-propanesulfonic acid
PFBS Perfluoro-1-butanesulfonic acid
PFPeS Perfluoro-1-pentanesulfonic acid

di-PFHxS (1)
Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)
Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)
Linear Perfluorohexanesulfonic acid
PFHpS
Perfluoro-1-heptanesulfonic acid

di-PFOS (5)

Total Perfluorodimethylhexane sulfonic acids mono-PFOS (5)

Total Perfluoromethylheptane sulfonic acids L-PFOS (5)

Linear Perfluoroctanesulfonic acid

PFNS

Perfluoro-1-nonanesulfonic acid

PFDS

Perfluoro-1-decanesulfonic acid

PFECHS Perfluoro-4-ethylcyclohexanesulfonic acid

Perfluoroalkylcarboxylic acids

PFBA Perfluoro-n-butanoic acid PFPeA Perfluoro-n-pentanoic acid PFHxA Perfluoro-n-hexanoic acid PFHpA Perfluoro-n-heptanoic acid PFOA Perfluoro-n-octanoic acid PFNA Perfluoro-n-nonanoic acid PFDA Perfluoro-n-decanoic acid PFUnDA Perfluoro-n-undecanoic acid PFDoDA Perfluoro-n-dodecanoic acid PFTrDA Perfluoro-n-tridecanoic acid PFTeDA Perfluoro-n-tetradecanoic acid P37DMOA Perfluoro-3,7-dimethyloctanoic acid

Perfluorooctanesulfonamides

PFOSA Perfluoro-1-octanesulfonamide

NEtFOSA-M N-ethylperfluoro-1-octanesulfonamide

NMeFOSA-M N-methylperfluoro-1-octanesulfonamide

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA N-methylperfluoro-1-octanesulfonamidoacetic acid

Perfluorooctanesulfonamidoethanols

 NEtFOSE-M
 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol

 NMeFOSE-M
 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

Telomere Sulfonic acids

4:2 FTS1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid6:2 FTS1H,1H,2H,2H-perfluoro-1-octanesulfonic acid8:2 FTS1H,1H,2H,2H-perfluoro-1-decanesulfonic acid10:2 FTS1H,1H,2H,2H-perfluorododecanesulfonic acid

Telomere Carboxylic acids

FPrPA (3:3FTA) 3-Perfluoropropyl propanoic acid

AsureQuality Reference: 24-103815 Report Issued: 09-May-2024

AsureQuality Reference: 24-	-103815	Report Issued: 09-May-2024
Analyte	Full Name	
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid	
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid	
Miscellaneous		
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	
F-53B (minor)	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	
Sum F-53B	Sum of F-53B components (major + minor)	
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid	
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid	
Internal Standards		
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid	
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid	
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid	
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid	
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid	
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid	
MPFHpA	Perfluoro-n-[-1,2,3,4-13C4]heptanoic acid	
M8PFOA	Perfluoro-n-[13C8]octanoic acid	
M9PFNA	Perfluoro-n-[13C9]nonanoic acid	
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid	
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid	
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid	
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid	
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide	
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide	
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide	
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid	
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid	
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol	
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol	
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid	
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid	
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid	
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid	

NR = Not Reportable

LOD = Limit of Detection

LOR = Limit of Reporting



# Certificate of Analysis

**Submission Reference: A02744125** 

**Final Report** 

**NZDF ESDAT Pattle Delamore Partners Limited** P O Box 9528 Auckland 1149 **New Zealand** 

PO Number: OHA\_PFAS

Report Issued: 09-May-2024 AsureQuality Reference: 24-103802 Sample(s) Received: 12-Apr-2024 08:15

Testing Period: 15-Apr-2024 to 09-May-2024 Date of analysis is available on request.

# Results

Report Number: 3749209

The tests were performed on the samples as received.

Sample Condition: Acceptable         Sampled Date: 11-Apr-2024           Test         Result         Unit         Method Reference           Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water         Perfluorally/sulfonic acids           PFPFS         < 0.0010	Customer Sample Name: OHA_GW65_1104	124		<b>Lab ID:</b> 24-103802-1
Poly- and Perfluorinated Alkyl Substances (PFAS) in Polable Water           Perfluoroalkylsulfonic acids         < 0.0010	Sample Condition: Acceptable	Sampled Date: 11-Apr-2024		
Perfluoroality/stutfonic acids         PFPrS         <0.0010	Test	Result	Unit	Method Reference
PFPRS	Poly- and Perfluorinated Alkyl Substances (F	PFAS) in Potable Water		
PFBS	Perfluoroalkylsulfonic acids			
PFPeS         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           di-PFHxS (1)         <0.0010	PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
AsureQuality Method (LC-MS/MS)   Mono-PFNxS (1)   Mono-PFNxS (2)   Mono-PFNxS (3)   Mono-PFNxS (3)   Mono-PFNxS (3)   Mono-PFNxS (3)   Mono-PFNxS (3)   Mono-PFNxS (3)   Mono-PFNxS (4)   Mono-PFNxS (5)   Mono-PFNxS (6)   Mono-PFNxS (7)   Mono-PFNxS (1)   Mono-	PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)         <0.0010	PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)   < 0.0010   μg/L   AsureQuality Method (LC-MS/MS)	mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           mono-PFOS (5)         <0.0010	Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           L-PFOS (5)         <0.0010	PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           Sum PFHxS+PFOS (1)         <0.0010	mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)         <0.0010	L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS         <0.0020         μg/L         AsureQuality Method (LC-MS/MS)           PFDS         NR         μg/L         AsureQuality Method (LC-MS/MS)           PFECHS         <0.0020	Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDS         NR         μg/L         AsureQuality Method (LC-MS/MS)           PFECHS         <0.0020         μg/L         AsureQuality Method (LC-MS/MS)           Perfluoroalkylcarboxylic acids         V           PFBA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFPeA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFHxA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFDA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFNA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFDA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFDA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)	Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS         <0.0020         μg/L         AsureQuality Method (LC-MS/MS)           Perfluoroalkylcarboxylic acids           PFBA         <0.0010	PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids           PFBA         <0.0010	PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFBA         <0.0010	PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFHxA         <0.0010	Perfluoroalkylcarboxylic acids			
PFHxA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFHpA         <0.0010	PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFOA         <0.0010	PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFNA         <0.0010	PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFDA         <0.0010	PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA <0.0010 µg/L AsureQuality Method (LC-MS/MS)	PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
	PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA <0.0010 μg/L AsureQuality Method (LC-MS/MS)	PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
	PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report: https://www.asurequality.com/about/terms-of-business/

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides	THIC	μg/L	Asia e Quality Metrod (ES Morwo)
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids	-0.0010	P9/L	/ Hours quality Mountain (Ea Mornia)
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids		10	
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	NR	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids		7.0	, , , , , , , , , , , , , , , , , , , ,
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	NR	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous		7.0	
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards		F-9-	,
M3PFBS	99	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	84	%	AsureQuality Method (LC-MS/MS)
M8PFOS	96	%	AsureQuality Method (LC-MS/MS)
M4PFBA	93	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	86	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	87	%	AsureQuality Method (LC-MS/MS)
MPFHpA	94	%	AsureQuality Method (LC-MS/MS)
M8PFOA	90	%	AsureQuality Method (LC-MS/MS)
M9PFNA	93	%	
			AsureQuality Method (LC-MS/MS)
M6PFDA	98	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	128	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	188 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	254 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	157 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	181 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	76	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	84	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	244 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	201 (R)	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	78	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	97	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

# **QC Results**

#### **Blank**

Relates to sample(s) 24-103802-1

est	Result	Unit	Method Reference
oly- and Perfluorinated Alkyl Substances (PFAS) in Pota	able Water		
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

est	Result	Unit	Method Reference	
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Perfluorooctanesulfonamidoethanols				
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Telomere Sulfonic acids				
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
10:2 FTS	NR	μg/L	AsureQuality Method (LC-MS/MS)	
Telomere Carboxylic acids				
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
FHpPA (7:3FTA)	NR	μg/L	AsureQuality Method (LC-MS/MS)	
Miscellaneous				
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)	
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)	
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Internal Standards				
M3PFBS	100	%	AsureQuality Method (LC-MS/MS)	
M3PFHxS	100	%	AsureQuality Method (LC-MS/MS)	
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)	
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)	
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)	
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)	
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)	
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)	
M9PFNA	100	%	AsureQuality Method (LC-MS/MS)	
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)	
M7PFUnDA	100	%	AsureQuality Method (LC-MS/MS)	
MPFDoDA	100	%	AsureQuality Method (LC-MS/MS)	
MPFTeDA	100	%	AsureQuality Method (LC-MS/MS)	
MPFOSA	100	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSA	100	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSA	100	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSAA	100	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSAA	100	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSE	100	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSE	100	%	AsureQuality Method (LC-MS/MS)	
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)	
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)	
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)	
M3HFPO-DA	100	%	AsureQuality Method (LC-MS/MS)	

AsureQuality Reference: 24-103802 Report Issued: 09-May-2024

#### **Analysis Summary**

## **Wellington Laboratory**

Analysis Method Accreditation Authorised by

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water

DX-PFCS01, 03-SUITE\_B AsureQuality Method (LC-MS/MS) IANZ Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9CI-PF3ONS (F-53B major) and 11CI-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

Aller

**Amelie Sellier** 

Scientist

# Accreditation





Report Issued: 09-May-2024

# **Appendix**

# **Analyte LOR Summary**

# Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

1 ory and 1 ornaormatou / aityr Cabotanoco (1 1 / te	, in a capie water the area and medica (20 )
Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 μg/L
PFBS	0.0010 μg/L
PFPeS	0.0010 μg/L
di-PFHxS (1)	0.0010 μg/L
mono-PFHxS (1)	0.0010 μg/L
L-PFHxS (1)	0.0010 μg/L
Total PFHxS (3)	0.0010 μg/L
PFHpS	0.0010 μg/L
di-PFOS (5)	0.0010 μg/L
mono-PFOS (5)	0.0010 μg/L
L-PFOS (5)	0.0010 μg/L
Total PFOS (7)	0.0010 μg/L
Sum PFHxS+PFOS (1)	0.0010 μg/L
PFNS	0.0010 μg/L
PFDS	NR μg/L
PFECHS	0.0010 μg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 μg/L
PFPeA	0.0010 μg/L
PFHxA	0.0010 μg/L
PFHpA	0.0010 μg/L
PFOA	0.0010 μg/L
PFNA	0.0010 µg/L
PFDA	0.0010 µg/L
PFUnDA	0.0010 µg/L
PFDoDA	0.0010 µg/L
PFTrDA	NR μg/L
PFTeDA	NR μg/L
P37DMOA	NR μg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 μg/L
NEtFOSA-M	NR μg/L
NMeFOSA-M	0.0010 μg/L
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 μg/L
NMeFOSAA	0.0010 µg/L
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	0.0010 μg/L
NMeFOSE-M	0.0010 µg/L
Telomere Sulfonic acids	
4:2 FTS	0.0010 μg/L
6:2 FTS	0.0010 μg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	NR μg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 μg/L
FPePA (5:3FTA)	0.0010 µg/L

FHpPA (7:3FTA)	NR μg/L
Miscellaneous	
F-53B (major)	0.0010 μg/L
F-53B (minor)	0.0010 μg/L
Sum F-53B	0.0010 μg/L
ADONA	0.0010 μg/L
HFPO-DA (GenX)	0.0010 μg/L

#### **Analyte Definitions**

#### Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte Full Name

Perfluoroalkylsulfonic acids

PFPS Perfluoro-1-propanesulfonic acid
PFBS Perfluoro-1-butanesulfonic acid
PFPeS Perfluoro-1-pentanesulfonic acid

di-PFHxS (1)

Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)

Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)

Linear Perfluorohexanesulfonic acid

PFHpS

Perfluoro-1-heptanesulfonic acid

di-PFOS (5)

Total Perfluorodimethylhexane sulfonic acids mono-PFOS (5)

Total Perfluoromethylheptane sulfonic acids L-PFOS (5)

Linear Perfluoroctanesulfonic acid

PFNS

Perfluoro-1-nonanesulfonic acid

PFDS

Perfluoro-1-decanesulfonic acid

PFECHS Perfluoro-4-ethylcyclohexanesulfonic acid

Perfluoroalkylcarboxylic acids

PFBA Perfluoro-n-butanoic acid PFPeA Perfluoro-n-pentanoic acid PFHxA Perfluoro-n-hexanoic acid PFHpA Perfluoro-n-heptanoic acid PFOA Perfluoro-n-octanoic acid PFNA Perfluoro-n-nonanoic acid PFDA Perfluoro-n-decanoic acid PFUnDA Perfluoro-n-undecanoic acid PFDoDA Perfluoro-n-dodecanoic acid PFTrDA Perfluoro-n-tridecanoic acid PFTeDA Perfluoro-n-tetradecanoic acid P37DMOA Perfluoro-3,7-dimethyloctanoic acid

Perfluorooctanesulfonamides

PFOSA Perfluoro-1-octanesulfonamide

NEtFOSA-M N-ethylperfluoro-1-octanesulfonamide

NMeFOSA-M N-methylperfluoro-1-octanesulfonamide

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA N-methylperfluoro-1-octanesulfonamidoacetic acid

Perfluorooctanesulfonamidoethanols

 NEtFOSE-M
 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol

 NMeFOSE-M
 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

Telomere Sulfonic acids

4:2 FTS 1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS 1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS 1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS 1H,1H,2H,2H-perfluorododecanesulfonic acid

Telomere Carboxylic acids

FPrPA (3:3FTA) 3-Perfluoropropyl propanoic acid

AsureQuality Reference. 24-10.	3002	Report Issueu. 09-Iviay-2024
Analyte	Full Name	
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid	
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid	
Miscellaneous		
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	
F-53B (minor)	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	
Sum F-53B	Sum of F-53B components (major + minor)	
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid	
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid	
Internal Standards		
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid	
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid	
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid	
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid	
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid	
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid	
MPFHpA	Perfluoro-n-[-1,2,3,4-13C4]heptanoic acid	
M8PFOA	Perfluoro-n-[13C8]octanoic acid	
M9PFNA	Perfluoro-n-[13C9]nonanoic acid	
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid	
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid	
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid	
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid	
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide	
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide	
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide	
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid	
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid	
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol	
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol	
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid	
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid	
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid	
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid	
LOR = Limit of Reporting	LOD = Limit of Detection NR = Not Reportable	,



# Certificate of Analysis

**Submission Reference: A02744125** 

**Final Report** 

**NZDF ESDAT Pattle Delamore Partners Limited** P O Box 9528 Auckland 1149 **New Zealand** 

PO Number: OHA\_PFAS

Report Issued: 23-Apr-2024 AsureQuality Reference: 24-100766 Sample(s) Received: 10-Apr-2024 08:30

Testing Period: 10-Apr-2024 to 23-Apr-2024 Date of analysis is available on request.

# Results

Report Number: 3727049

The tests were performed on the samples as received.

Sample Condition: Acceptable         Sampled Date: :09-Apr-2024           Test         Result         Unit         Method Reference           Poby-and Perfluorinated Alkyl Substances (PFAS) in Potable Water         Perfluorally sulfonic acids           PFPPS         < 0.0010	Customer Sample Name: OHA_GW106_090	0424		<b>Lab ID:</b> 24-100766-1
Perfluoroalky/sulfonic acids           PEPFS         <0.0010	Sample Condition: Acceptable	Sampled Date: 09-Apr-2024		
Perfluoroalky/sulfonic acids         Co.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFBS         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFBS         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           di-PFHxS (1)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           mono-PFHxS (1)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           L-PFHxS (1)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           Total PFHxS (3)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           JPFDS         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           di-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           mono-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           L-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           Total PFOS (7)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           Sum PFHxS+PFOS (1)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFDS         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFEA	Test	Result	Unit	Method Reference
PFPrS	Poly- and Perfluorinated Alkyl Substances (F	PFAS) in Potable Water		
PFBS	Perfluoroalkylsulfonic acids			
PFPeS         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           di-PFHxS (1)         <0.0010	PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
AsureQuality Method (LC-MS/MS)   Mono-PFHxS (1)   Mono-PFHxS (2)   Mono-PFHxS (3)   Mono-PFHXS (4)   Mono-PFTX (4)   Mono-PFTXS (4)   Mono-P	PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           L-PFHxS (1)         <0.0010	PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)   <0.0010   µg/L   AsureQuality Method (LC-MS/MS)	mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           mono-PFOS (5)         <0.0010	Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           L-PFOS (5)         <0.0010	PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           Sum PFHxS+PFOS (1)         <0.0010	mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)         <0.0010	L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFDS         <0.0050	Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDS         <0.0050	Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS         <0.0050         μg/L         AsureQuality Method (LC-MS/MS)           Perfluoroalkylcarboxylic acids           PFBA         <0.0010	PFNS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids           PFBA         <0.0010	PFDS	<0.0050	μg/L	AsureQuality Method (LC-MS/MS)
PFBA         <0.0010	PFECHS	<0.0050	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFHxA         <0.0010	Perfluoroalkylcarboxylic acids			
PFHxA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFHpA         <0.0010	PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFOA         <0.0010	PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFNA         <0.0010	PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFDA         <0.0010	PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA <0.0010 µg/L AsureQuality Method (LC-MS/MS)	PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
	PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA <0.0010 μg/L AsureQuality Method (LC-MS/MS)	PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
	PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report: https://www.asurequality.com/about/terms-of-business/

**DNEtFOSE** 

DNMeFOSE

93

79

%

AsureQuality Method (LC-MS/MS)

AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	176 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	118	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	115	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

# **QC Results**

#### **Blank**

Relates to sample(s) 24-100766-1

est	Result	Unit	Method Reference
oly- and Perfluorinated Alkyl Substances (PFAS) in Pota	able Water		
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0050	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

95

102

133

%

%

%

M6:2FTS

M8:2FTS

M3HFPO-DA

AsureQuality Method (LC-MS/MS)

AsureQuality Method (LC-MS/MS)

AsureQuality Method (LC-MS/MS)

AsureQuality Reference: 24-100766 Report Issued: 23-Apr-2024

#### **Analysis Summary**

## **Wellington Laboratory**

Analysis Method Accreditation Authorised by

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water

DX-PFCS01, 03-SUITE\_B AsureQuality Method (LC-MS/MS) IANZ Christopher Sampson

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9CI-PF3ONS (F-53B major) and 11CI-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

**Christopher Sampson** 

Scientist

# **Accreditation**





# **Appendix**

# **Analyte LOR Summary**

Poly- and Perfluorinated Alkyl Substances	(PFAS) in Potable Water - Asure	eQuality Method (LC-MS/MS)

Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 μg/L
PFBS	0.0010 μg/L
PFPeS	0.0010 μg/L
di-PFHxS (1)	0.0010 μg/L
mono-PFHxS (1)	0.0010 μg/L
L-PFHxS (1)	0.0010 μg/L
Total PFHxS (3)	0.0010 μg/L
PFHpS	0.0010 μg/L
di-PFOS (5)	0.0010 μg/L
mono-PFOS (5)	0.0010 μg/L
L-PFOS (5)	0.0010 μg/L
Total PFOS (7)	0.0010 μg/L
Sum PFHxS+PFOS (1)	0.0010 μg/L
PFNS	0.0010 μg/L
PFDS	0.0010 μg/L
PFECHS	0.0010 μg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 μg/L
PFPeA	0.0010 μg/L
PFHxA	0.0010 μg/L
PFHpA	0.0010 μg/L
PFOA	0.0010 μg/L
PFNA	0.0010 μg/L
PFDA	0.0010 μg/L
PFUnDA	0.0010 μg/L
PFDoDA	0.0010 μg/L
PFTrDA	0.0010 μg/L
PFTeDA	0.0010 μg/L
P37DMOA	0.0010 μg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 μg/L
NEtFOSA-M	0.0010 μg/L
NMeFOSA-M	0.0010 μg/L
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 μg/L
NMeFOSAA	0.0010 μg/L
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	0.0010 μg/L
NMeFOSE-M	0.0010 μg/L
Telomere Sulfonic acids	
4:2 FTS	0.0010 μg/L
6:2 FTS	0.0010 μg/L
8:2 FTS	0.0010 μg/L
10:2 FTS	0.0010 μg/L
Telomere Carboxylic acids	0.0040.ug/l
FPrPA (3:3FTA) FPePA (5:3FTA)	0.0010 μg/L 0.0010 μg/L
THO A (O.O. TA)	ο.οο το μ <del>y</del> r∟

FHpPA (7:3FTA)	0.0010 μg/L
Miscellaneous	
F-53B (major)	0.0010 μg/L
F-53B (minor)	0.0010 μg/L
Sum F-53B	0.0010 μg/L
ADONA	0.0010 μg/L
HFPO-DA (GenX)	0.0010 μg/L

#### **Analyte Definitions**

#### Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte Full Name

Perfluoroalkylsulfonic acids

PFPrS Perfluoro-1-propanesulfonic acid
PFBS Perfluoro-1-butanesulfonic acid
PFPeS Perfluoro-1-pentanesulfonic acid

 di-PFHxS (1)
 Total Perfluorodimethylbutane sulfonic acids

 mono-PFHxS (1)
 Total Perfluoromethylpentane sulfonic acids

 L-PFHxS (1)
 Linear Perfluorohexanesulfonic acid

 PFHpS
 Perfluoro-1-heptanesulfonic acid

di-PFOS (5)

Total Perfluorodimethylhexane sulfonic acids mono-PFOS (5)

Total Perfluoromethylheptane sulfonic acids L-PFOS (5)

Linear Perfluoroctanesulfonic acid

PFNS

Perfluoro-1-nonanesulfonic acid

PFDS

Perfluoro-1-decanesulfonic acid

PFECHS Perfluoro-4-ethylcyclohexanesulfonic acid

Perfluoroalkylcarboxylic acids

PFBA Perfluoro-n-butanoic acid PFPeA Perfluoro-n-pentanoic acid PFHxA Perfluoro-n-hexanoic acid PFHpA Perfluoro-n-heptanoic acid PFOA Perfluoro-n-octanoic acid PFNA Perfluoro-n-nonanoic acid PFDA Perfluoro-n-decanoic acid PFUnDA Perfluoro-n-undecanoic acid PFDoDA Perfluoro-n-dodecanoic acid PFTrDA Perfluoro-n-tridecanoic acid PFTeDA Perfluoro-n-tetradecanoic acid P37DMOA Perfluoro-3,7-dimethyloctanoic acid

Perfluorooctanesulfonamides

PFOSA Perfluoro-1-octanesulfonamide

NEtFOSA-M N-ethylperfluoro-1-octanesulfonamide

NMeFOSA-M N-methylperfluoro-1-octanesulfonamide

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA N-methylperfluoro-1-octanesulfonamidoacetic acid

Perfluorooctanesulfonamidoethanols

 NEtFOSE-M
 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol

 NMeFOSE-M
 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

Telomere Sulfonic acids

4:2 FTS 1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS 1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS 1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS 1H,1H,2H,2H-perfluorododecanesulfonic acid

Telomere Carboxylic acids

FPrPA (3:3FTA) 3-Perfluoropropyl propanoic acid

Additionally Reference: 24-1		
Analyte	Full Name	
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid	
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid	
Miscellaneous		
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	
F-53B (minor)	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	
Sum F-53B	Sum of F-53B components (major + minor)	
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid	
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid	
Internal Standards		
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid	
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid	
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid	
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid	
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid	
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid	
MPFHpA	Perfluoro-n-[-1,2,3,4-13C4]heptanoic acid	
M8PFOA	Perfluoro-n-[13C8]octanoic acid	
M9PFNA	Perfluoro-n-[13C9]nonanoic acid	
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid	
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid	
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid	
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid	
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide	
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide	
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide	
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid	
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid	
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol	
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol	
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid	
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid	
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid	
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid	
LOR = Limit of Reporting	LOD = Limit of Detection NR = Not Reportable	



# Certificate of Analysis

**Submission Reference: A02744125** 

**Final Report** 

**NZDF ESDAT Pattle Delamore Partners Limited** P O Box 9528 Auckland 1149 **New Zealand** 

PO Number: OHA\_PFAS

Report Issued: 09-May-2024 Sample(s) Received: 12-Apr-2024 08:15 AsureQuality Reference: 24-103820

Testing Period: 15-Apr-2024 to 09-May-2024 Date of analysis is available on request.

# Results

The tests were performed on the samples as received.

Sample Condition: Acceptable         Sampled Date: 11-Apr-2024           Test         Result         Unit         Method Reference           Poly-and Perfluorinated Alkyl Substanose (PFAS) in Potable Water           PEPFIPS         < 0.0010	Customer Sample Name: OHA_GW107_110	0424		<b>Lab ID:</b> 24-103820-1
Perfluoroalky/sulfonic acids           PEPFIS         <0.0010	Sample Condition: Acceptable	Sampled Date: 11-Apr-2024		
Perfluoroalky/sulfonic acids         Co.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFBS         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFBS         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           di-PFHxS (1)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           mono-PFHxS (1)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           L-PFHxS (1)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           Total PFHxS (3)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           d-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           mono-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           L-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           L-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           Total PFOS (7)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFNS         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFDS         NR         μg/L         AsureQuality Method (LC-MS/MS)           PFEA         <0.0	Test	Result	Unit	Method Reference
PFPRS	Poly- and Perfluorinated Alkyl Substances (F	PFAS) in Potable Water		
PFBS	Perfluoroalkylsulfonic acids			
PFPeS         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           di-PFHxS (1)         <0.0010	PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
AsureQuality Method (LC-MS/MS)   Mono-PFHxS (1)   Mono-PFHxS (2)   Mono-PFHxS (3)   Mono-PFHXS (4)   Mono-	PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           L-PFHxS (1)         <0.0010	PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)   <0.0010   µg/L   AsureQuality Method (LC-MS/MS)	mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           mono-PFOS (5)         <0.0010	Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           L-PFOS (5)         <0.0010	PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           Sum PFHxS+PFOS (1)         <0.0010	mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)         <0.0010	L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS         <0.0020         μg/L         AsureQuality Method (LC-MS/MS)           PFDS         NR         μg/L         AsureQuality Method (LC-MS/MS)           PFECHS         <0.0020	Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDS         NR         μg/L         AsureQuality Method (LC-MS/MS)           PFECHS         <0.0020         μg/L         AsureQuality Method (LC-MS/MS)           Perfluoroalkylcarboxylic acids           PFBA         <0.0010	Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS         <0.0020         μg/L         AsureQuality Method (LC-MS/MS)           Perfluoroalkylcarboxylic acids           PFBA         <0.0010	PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids           PFBA         <0.0010	PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFBA         <0.0010	PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFHxA         <0.0010	Perfluoroalkylcarboxylic acids			
PFHxA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFHpA         <0.0010	PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFOA         <0.0010	PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFNA         <0.0010	PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFDA         <0.0010	PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA <0.0010 µg/L AsureQuality Method (LC-MS/MS)	PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
	PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA <0.0010 μg/L AsureQuality Method (LC-MS/MS)	PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
	PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report: https://www.asurequality.com/about/terms-of-business/

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	NR	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	NR	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	106	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	81	%	AsureQuality Method (LC-MS/MS)
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)
M4PFBA	82	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	88	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	97	%	AsureQuality Method (LC-MS/MS)
MPFHpA	85	%	AsureQuality Method (LC-MS/MS)
M8PFOA	92	%	AsureQuality Method (LC-MS/MS)
M9PFNA	82	%	AsureQuality Method (LC-MS/MS)
M6PFDA	103	%	AsureQuality Method (LC-MS/MS)
	123	%	AsureQuality Method (LC-MS/MS)
	363 (R)	%	AsureQuality Method (LC-MS/MS)
	2237 (R)	%	AsureQuality Method (LC-MS/MS)
	133	%	AsureQuality Method (LC-MS/MS)
	685 (R)	%	AsureQuality Method (LC-MS/MS)
	733 (R)	%	AsureQuality Method (LC-MS/MS)
	126	%	AsureQuality Method (LC-MS/MS)
	91	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	421 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	275 (R)	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	107	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	121	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	78	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	92	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

# **QC Results**

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Relates to sample(s) 24-103820-1

est	Result	Unit	Method Reference
oly- and Perfluorinated Alkyl Substances (PFAS) in Pota	able Water		
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
РЗ7ДМОА	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

- Test	Result	Unit	Method Reference	
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Perfluorooctanesulfonamidoethanols		F-3-		
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Telomere Sulfonic acids		F-3-		
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
10:2 FTS	NR	μg/L	AsureQuality Method (LC-MS/MS)	
Telomere Carboxylic acids				
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
FHpPA (7:3FTA)	NR	μg/L	AsureQuality Method (LC-MS/MS)	
Miscellaneous		F-3-		
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)	
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)	
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Internal Standards				
M3PFBS	100	%	AsureQuality Method (LC-MS/MS)	
M3PFHxS	100	%	AsureQuality Method (LC-MS/MS)	
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)	
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)	
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)	
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)	
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)	
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)	
M9PFNA	100	%	AsureQuality Method (LC-MS/MS)	
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)	
M7PFUnDA	100	%	AsureQuality Method (LC-MS/MS)	
MPFDoDA	100	%	AsureQuality Method (LC-MS/MS)	
MPFTeDA	100	%	AsureQuality Method (LC-MS/MS)	
MPFOSA	100	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSA	100	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSA	100	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSAA	100	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSAA	100	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSE	100	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSE	100	%	AsureQuality Method (LC-MS/MS)	
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)	
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)	
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)	
M3HFPO-DA	100	%	AsureQuality Method (LC-MS/MS)	
			<u> </u>	

AsureQuality Reference: 24-103820 Report Issued: 09-May-2024

#### **Analysis Summary**

# **Wellington Laboratory**

Analysis Method Accreditation Authorised by

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water

DX-PFCS01, 03-SUITE\_B AsureQuality Method (LC-MS/MS) IANZ Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9CI-PF3ONS (F-53B major) and 11CI-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

Allon

Amelie Sellier

Scientist

# Accreditation





Report Issued: 09-May-2024

# **Appendix**

# **Analyte LOR Summary**

DD	(DEAGN: D ( ) ) A/ (	A 0 " 14 4 1/10 MONIO"
Poly- and Perfluorinated Alkyl Substances	(PFAS) in Potable Water -	AsureQuality Method (LC-MS/MS)

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Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 μg/L
PFBS	0.0010 μg/L
PFPeS	0.0010 μg/L
di-PFHxS (1)	0.0010 μg/L
mono-PFHxS (1)	0.0010 μg/L
L-PFHxS (1)	0.0010 μg/L
Total PFHxS (3)	0.0010 μg/L
PFHpS	0.0010 μg/L
di-PFOS (5)	0.0010 μg/L
mono-PFOS (5)	0.0010 μg/L
L-PFOS (5)	0.0010 μg/L
Total PFOS (7)	0.0010 μg/L
Sum PFHxS+PFOS (1)	0.0010 μg/L
PFNS	0.0010 μg/L
PFDS	NR µg/L
PFECHS	0.0010 μg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 μg/L
PFPeA	0.0010 μg/L
PFHxA	0.0010 μg/L
PFHpA	0.0010 μg/L
PFOA	0.0010 μg/L
PFNA	0.0010 μg/L
PFDA	0.0010 μg/L
PFUnDA	0.0010 μg/L
PFDoDA	0.0010 μg/L
PFTrDA	NR µg/L
PFTeDA	NR µg/L
P37DMOA	NR µg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 μg/L
NEtFOSA-M	NR µg/L
NMeFOSA-M	0.0010 μg/L
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 μg/L
NMeFOSAA	0.0010 μg/L
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	0.0010 μg/L
NMeFOSE-M	0.0010 μg/L
Telomere Sulfonic acids	
4:2 FTS	0.0010 μg/L
6:2 FTS	0.0010 μg/L
8:2 FTS	0.0010 μg/L
10:2 FTS	NR µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 μg/L
FPePA (5:3FTA)	0.0010 μg/L

FHpPA (7:3FTA)	NR μg/L
Miscellaneous	
F-53B (major)	0.0010 μg/L
F-53B (minor)	0.0010 μg/L
Sum F-53B	0.0010 μg/L
ADONA	0.0010 μg/L
HFPO-DA (GenX)	0.0010 μg/L

## **Analyte Definitions**

#### Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte Full Name

Perfluoroalkylsulfonic acids

PFPS Perfluoro-1-propanesulfonic acid
PFBS Perfluoro-1-butanesulfonic acid
PFPeS Perfluoro-1-pentanesulfonic acid

di-PFHxS (1)

Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)

Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)

Linear Perfluorohexanesulfonic acid

PFHpS

Perfluoro-1-heptanesulfonic acid

di-PFOS (5)

Total Perfluorodimethylhexane sulfonic acids mono-PFOS (5)

Total Perfluoromethylheptane sulfonic acids L-PFOS (5)

Linear Perfluoroctanesulfonic acid

PFNS

Perfluoro-1-nonanesulfonic acid

PFDS

Perfluoro-1-decanesulfonic acid

PFECHS Perfluoro-4-ethylcyclohexanesulfonic acid

Perfluoroalkylcarboxylic acids

PFBA Perfluoro-n-butanoic acid PFPeA Perfluoro-n-pentanoic acid PFHxA Perfluoro-n-hexanoic acid PFHpA Perfluoro-n-heptanoic acid PFOA Perfluoro-n-octanoic acid PFNA Perfluoro-n-nonanoic acid PFDA Perfluoro-n-decanoic acid PFUnDA Perfluoro-n-undecanoic acid PFDoDA Perfluoro-n-dodecanoic acid PFTrDA Perfluoro-n-tridecanoic acid PFTeDA Perfluoro-n-tetradecanoic acid P37DMOA Perfluoro-3,7-dimethyloctanoic acid

Perfluorooctanesulfonamides

PFOSA Perfluoro-1-octanesulfonamide

NEtFOSA-M N-ethylperfluoro-1-octanesulfonamide

NMeFOSA-M N-methylperfluoro-1-octanesulfonamide

Perfluorooctanesulfonamidoacetic acids

 NEtFOSAA
 N-ethylperfluoro-1-octanesulfonamidoacetic acid

 NMeFOSAA
 N-methylperfluoro-1-octanesulfonamidoacetic acid

Perfluorooctanesulfonamidoethanols

 NEtFOSE-M
 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol

 NMeFOSE-M
 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

Telomere Sulfonic acids

4:2 FTS 1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS 1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS 1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS 1H,1H,2H,2H-perfluorododecanesulfonic acid

Telomere Carboxylic acids

FPrPA (3:3FTA) 3-Perfluoropropyl propanoic acid

AsureQuality Reference: 24-103820 Report Issued: 09-May-2024

AsureQuality Reference. 24-10.	3020	Report Issueu. 09-Iviay-2024
Analyte	Full Name	
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid	
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid	
Miscellaneous		
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	
F-53B (minor)	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	
Sum F-53B	Sum of F-53B components (major + minor)	
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid	
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid	
Internal Standards		
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid	
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid	
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid	
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid	
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid	
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid	
MPFHpA	Perfluoro-n-[-1,2,3,4-13C4]heptanoic acid	
M8PFOA	Perfluoro-n-[13C8]octanoic acid	
M9PFNA	Perfluoro-n-[13C9]nonanoic acid	
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid	
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid	
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid	
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid	
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide	
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide	
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide	
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid	
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid	
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol	
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol	
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid	
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid	
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid	
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid	
LOR = Limit of Reporting	LOD = Limit of Detection NR = Not Reportable	,



# Certificate of Analysis

**Submission Reference: A02744125** 

**Final Report** 

Nerena Rhodes **Pattle Delamore Partners Limited** P O Box 9528 Auckland 1149 **New Zealand** 

PO Number: OHA\_PFAS

Report Issued: 24-Apr-2024 AsureQuality Reference: 24-100810 Sample(s) Received: 10-Apr-2024 08:30

Testing Period: 10-Apr-2024 to 23-Apr-2024 Date of analysis is available on request.

## Results

Report Number: 3728075

The tests were performed on the samples as received.

Sample Condition: Acceptable         Sampled Dets: 09-Apr-2024           Test         Rosult         Unit         Method Reference           Perby- and Perfluorinated Alkyl Substances (PFAS) in Potable Water         Perfluoroalkysulfonic acids           PFPPS         < 0.0010	Customer Sample Name:         OHA_GW108_090424         Lab ID: 24-100810-1				
Perfluoroality/sulfonic acids           PFPPS         <0.0010	Sample Condition: Acceptable	Sampled Date: 09-Apr-2024			
Perfluoroality/sulfonic acids         40.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFBS         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFBS         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           di-PFHxS (1)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           mono-PFHxS (1)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           L-PFHxS (1)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           Total PFHxS (3)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFHpS         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           di-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           mono-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           L-PFOS (7)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           Sum PFHxS+PFOS (1)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFDS         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFDS         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFDS <t< th=""><th>Test</th><th>Result</th><th>Unit</th><th>Method Reference</th></t<>	Test	Result	Unit	Method Reference	
PFPRS	Poly- and Perfluorinated Alkyl Substances (F	PFAS) in Potable Water			
PFBS	Perfluoroalkylsulfonic acids				
PFPeS         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           di-PFHxS (1)         <0.0010	PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
di-PFHxS (1)	PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
mono-PFHxS (1)         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           L-PFHxS (1)         <0.0010	PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
L-PFHxS (1)	di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Total PFHxS (3)	mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
PFHpS	L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
di-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           mono-PFOS (5)         <0.0010	Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
mono-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           L-PFOS (5)         <0.0010	PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
L-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           Total PFOS (7)         <0.0010	di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Total PFOS (7)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           Sum PFHxS+PFOS (1)         <0.0010	mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Sum PFHxS+PFOS (1)         <0.0010	L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
PFNS         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFDS         <0.0050	Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
PFDS         <0.0050	Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
PFECHS         <0.0050         μg/L         AsureQuality Method (LC-MS/MS)           Perfluoroalkylcarboxylic acids           PFBA         <0.0010	PFNS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Perfluoroalkylcarboxylic acids           PFBA         <0.0010	PFDS	<0.0050	μg/L	AsureQuality Method (LC-MS/MS)	
PFBA         <0.0010	PFECHS	<0.0050	μg/L	AsureQuality Method (LC-MS/MS)	
PFPeA         <0.0010	Perfluoroalkylcarboxylic acids				
PFHxA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFHpA         <0.0010	PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
PFHpA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFOA         <0.0010	PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
PFOA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFNA         <0.0010	PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
PFNA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFDA         <0.0010	PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
PFDA <0.0010 µg/L AsureQuality Method (LC-MS/MS)	PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
	PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
PFUnDA <0.0010 μg/L AsureQuality Method (LC-MS/MS)	PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
	PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report: https://www.asurequality.com/about/terms-of-business/

			<u> </u>	<u> </u>
Test	Result	Unit	Method Reference	
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
PFTrDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
PFTeDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
P37DMOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Perfluorooctanesulfonamides				
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
NEtFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Perfluorooctanesulfonamidoacetic acids				
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Perfluorooctanesulfonamidoethanols				
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Telomere Sulfonic acids				
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
10:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Telomere Carboxylic acids				
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
FHpPA (7:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Miscellaneous				
F-53B (major)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Sum F-53B	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Internal Standards			,	
M3PFBS	92	%	AsureQuality Method (LC-MS/MS)	
M3PFHxS	87	%	AsureQuality Method (LC-MS/MS)	
M8PFOS	95	%	AsureQuality Method (LC-MS/MS)	
M4PFBA	83	%	AsureQuality Method (LC-MS/MS)	
M5PFPeA	91	%	AsureQuality Method (LC-MS/MS)	
M5PFHxA	87	%	AsureQuality Method (LC-MS/MS)	
MPFHpA	98	%	AsureQuality Method (LC-MS/MS)	
		% %		
M8PFOA	88		AsureQuality Method (LC-MS/MS)	
M9PFNA	88	%	AsureQuality Method (LC-MS/MS)	
M6PFDA	91	%	AsureQuality Method (LC-MS/MS)	
M7PFUnDA	85	%	AsureQuality Method (LC-MS/MS)	
MPFDoDA	62	%	AsureQuality Method (LC-MS/MS)	
MPFTeDA	66	%	AsureQuality Method (LC-MS/MS)	
MPFOSA	79	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSA	60	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSA	68	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSAA	66	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSAA	78	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSE	62	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSE	67	%	AsureQuality Method (LC-MS/MS)	
			- , -,	

Test	Result	Unit	Method Reference
M4:2FTS	121	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	109	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	86	%	AsureQuality Method (LC-MS/MS)

## **QC Results**

### Blank

Relates to sample(s) 24-100810-1

est	Result	Unit	Method Reference
oly- and Perfluorinated Alkyl Substances (PFAS) in Pota	able Water		
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0050	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides		·	
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	97	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	88	%	AsureQuality Method (LC-MS/MS)
M8PFOS	93	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	101	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	96	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	95	%	AsureQuality Method (LC-MS/MS)
M9PFNA	93	%	AsureQuality Method (LC-MS/MS)
M6PFDA	105	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	91	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	98	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	89	%	AsureQuality Method (LC-MS/MS)
MPFOSA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	117	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	117	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	124	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	111	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	133	%	AsureQuality Method (LC-MS/MS)
		,~	,

AsureQuality Reference: 24-100810 Report Issued: 24-Apr-2024

### **Analysis Summary**

## **Wellington Laboratory**

Analysis Method Accreditation Authorised by

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water

DX-PFCS01, 03-SUITE\_B AsureQuality Method (LC-MS/MS) IANZ Christopher Sampson

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9CI-PF3ONS (F-53B major) and 11CI-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

**Christopher Sampson** 

Scientist

## **Accreditation**





AsureQuality Reference: 24-100810 Report Issued: 24-Apr-2024

# **Appendix**

## **Analyte LOR Summary**

Poly- and Perfluorinated Alk	vl Substances (PFAS	i) in Potable Water - Asure0	uality Method (LC-MS/MS)

Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 μg/L
PFBS	0.0010 μg/L
PFPeS	0.0010 μg/L
di-PFHxS (1)	0.0010 μg/L
mono-PFHxS (1)	0.0010 μg/L
L-PFHxS (1)	0.0010 μg/L
Total PFHxS (3)	0.0010 μg/L
PFHpS	0.0010 μg/L
di-PFOS (5)	0.0010 μg/L
mono-PFOS (5)	0.0010 μg/L
L-PFOS (5)	0.0010 μg/L
Total PFOS (7)	0.0010 μg/L
Sum PFHxS+PFOS (1)	0.0010 μg/L
PFNS	0.0010 μg/L
PFDS	0.0010 μg/L
PFECHS	0.0010 μg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 μg/L
PFPeA	0.0010 μg/L
PFHxA	0.0010 μg/L
PFHpA	0.0010 μg/L
PFOA	0.0010 μg/L
PFNA	0.0010 μg/L
PFDA	0.0010 μg/L
PFUnDA	0.0010 μg/L
PFDoDA	0.0010 μg/L
PFTrDA	0.0010 μg/L
PFTeDA	0.0010 μg/L
P37DMOA	0.0010 μg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 μg/L
NEtFOSA-M	0.0010 μg/L
NMeFOSA-M	0.0010 μg/L
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 μg/L
NMeFOSAA	0.0010 μg/L
Perfluorooctanesulfonamidoethanols  NEtFOSE-M	0.0040.ug/l
NMeFOSE-M	0.0010 μg/L 0.0010 μg/L
Telomere Sulfonic acids	0.0010 μg/L
4:2 FTS	0.0010 µg/L
6:2 FTS	0.0010 μg/L
8:2 FTS	0.0010 μg/L
10:2 FTS	0.0010 μg/L
Telomere Carboxylic acids	. 3
FPrPA (3:3FTA)	0.0010 μg/L
FPePA (5:3FTA)	0.0010 μg/L

FHpPA (7:3FTA)	0.0010 μg/L
Miscellaneous	
F-53B (major)	0.0010 μg/L
F-53B (minor)	0.0010 μg/L
Sum F-53B	0.0010 μg/L
ADONA	0.0010 μg/L
HFPO-DA (GenX)	0.0010 μg/L

### **Analyte Definitions**

#### Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte Full Name

Perfluoroalkylsulfonic acids

PFPS Perfluoro-1-propanesulfonic acid
PFBS Perfluoro-1-butanesulfonic acid
PFPeS Perfluoro-1-pentanesulfonic acid

 di-PFHxS (1)
 Total Perfluorodimethylbutane sulfonic acids

 mono-PFHxS (1)
 Total Perfluoromethylpentane sulfonic acids

 L-PFHxS (1)
 Linear Perfluorohexanesulfonic acid

 PFHpS
 Perfluoro-1-heptanesulfonic acid

di-PFOS (5)

Total Perfluorodimethylhexane sulfonic acids mono-PFOS (5)

Total Perfluoromethylheptane sulfonic acids L-PFOS (5)

Linear Perfluoroctanesulfonic acid

PFNS

Perfluoro-1-nonanesulfonic acid

PFDS

Perfluoro-1-decanesulfonic acid

PFECHS Perfluoro-4-ethylcyclohexanesulfonic acid

Perfluoroalkylcarboxylic acids

PFBA Perfluoro-n-butanoic acid PFPeA Perfluoro-n-pentanoic acid PFHxA Perfluoro-n-hexanoic acid PFHpA Perfluoro-n-heptanoic acid PFOA Perfluoro-n-octanoic acid PFNA Perfluoro-n-nonanoic acid PFDA Perfluoro-n-decanoic acid PFUnDA Perfluoro-n-undecanoic acid PFDoDA Perfluoro-n-dodecanoic acid PFTrDA Perfluoro-n-tridecanoic acid PFTeDA Perfluoro-n-tetradecanoic acid P37DMOA Perfluoro-3,7-dimethyloctanoic acid

Perfluorooctanesulfonamides

PFOSA Perfluoro-1-octanesulfonamide

NEtFOSA-M N-ethylperfluoro-1-octanesulfonamide

NMeFOSA-M N-methylperfluoro-1-octanesulfonamide

Perfluorooctanesulfonamidoacetic acids

 NEtFOSAA
 N-ethylperfluoro-1-octanesulfonamidoacetic acid

 NMeFOSAA
 N-methylperfluoro-1-octanesulfonamidoacetic acid

Perfluorooctanesulfonamidoethanols

 NEtFOSE-M
 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol

 NMeFOSE-M
 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

Telomere Sulfonic acids

4:2 FTS1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid6:2 FTS1H,1H,2H,2H-perfluoro-1-octanesulfonic acid8:2 FTS1H,1H,2H,2H-perfluoro-1-decanesulfonic acid10:2 FTS1H,1H,2H,2H-perfluorododecanesulfonic acid

Telomere Carboxylic acids

FPrPA (3:3FTA) 3-Perfluoropropyl propanoic acid

AsureQuality Reference. 24-100610		Report Issueu. 24-Apr-2024
Analyte	Full Name	
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid	
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid	
Miscellaneous		
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	
F-53B (minor)	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	
Sum F-53B	Sum of F-53B components (major + minor)	
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid	
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid	
Internal Standards		
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid	
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid	
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid	
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid	
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid	
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid	
MPFHpA	Perfluoro-n-[-1,2,3,4-13C4]heptanoic acid	
M8PFOA	Perfluoro-n-[13C8]octanoic acid	
M9PFNA	Perfluoro-n-[13C9]nonanoic acid	
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid	
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid	
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid	
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid	
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide	
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide	
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide	
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid	
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid	
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol	
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol	
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid	
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid	
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid	
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid	

NR = Not Reportable

LOD = Limit of Detection

LOR = Limit of Reporting



# Certificate of Analysis

**Submission Reference: A02744125** 

**Final Report** 

**NZDF ESDAT Pattle Delamore Partners Limited** P O Box 9528 Auckland 1149 **New Zealand** 

PO Number: OHA\_PFAS

Report Issued: 09-May-2024 Sample(s) Received: 12-Apr-2024 08:15 AsureQuality Reference: 24-103810

Testing Period: 15-Apr-2024 to 09-May-2024 Date of analysis is available on request.

## Results

The tests were performed on the samples as received.

Sample Condition: Acceptable         Sampled Date: 11-Apr-2024           Test         Result         Unit         Method Reference           Poly-and Perfluorinated Alkyl Substanose (PFAS) in Potable Water           PEPFIPS         < 0.0010	Customer Sample Name: OHA_GW109_110	)424		<b>Lab ID:</b> 24-103810-1
Perfluoroalky/sulfonic acids           PEPFS         <0.0010	Sample Condition: Acceptable	Sampled Date: 11-Apr-2024		
Perfluoroalky/sulfonic acids         Co.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFBS         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFBS         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           di-PFHxS (1)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           mono-PFHxS (1)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           L-PFHxS (1)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           Total PFHxS (3)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFHpS         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           di-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           mono-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           L-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           Total PFOS (7)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           Sum PFHxS+PFOS (1)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFDS         <0.0020         μg/L         AsureQuality Method (LC-MS/MS)           PFEA	Test	Result	Unit	Method Reference
PFPrS	Poly- and Perfluorinated Alkyl Substances (F	PFAS) in Potable Water		
PFBS	Perfluoroalkylsulfonic acids			
PFPeS         <0.0010         µg/L         AsureQuality Method (LC-MS/MS)           di-PFHxS (1)         <0.0010	PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
AsureQuality Method (LC-MS/MS)   Mono-PFHxS (1)   Mono-PFHxS (2)   Mono-PFHxS (3)   Mono-PFHXS (4)   Mono-PFTXS (4)   Mono-	PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)         <0.0010	PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)   <0.0010   µg/L   AsureQuality Method (LC-MS/MS)	mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           mono-PFOS (5)         <0.0010	Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           L-PFOS (5)         <0.0010	PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           Sum PFHxS+PFOS (1)         <0.0010	mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)         <0.0010	L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS         <0.0020         μg/L         AsureQuality Method (LC-MS/MS)           PFDS         NR         μg/L         AsureQuality Method (LC-MS/MS)           PFECHS         <0.0020	Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDS         NR         μg/L         AsureQuality Method (LC-MS/MS)           PFECHS         <0.0020         μg/L         AsureQuality Method (LC-MS/MS)           Perfluoroalkylcarboxylic acids           PFBA         <0.0010	Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS         <0.0020         μg/L         AsureQuality Method (LC-MS/MS)           Perfluoroalkylcarboxylic acids           PFBA         <0.0010	PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids           PFBA         <0.0010	PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFBA         <0.0010	PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFHxA         <0.0010	Perfluoroalkylcarboxylic acids			
PFHxA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFHpA         <0.0010	PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFOA         <0.0010	PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFNA         <0.0010	PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA         <0.0010         μg/L         AsureQuality Method (LC-MS/MS)           PFDA         <0.0010	PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA <0.0010 µg/L AsureQuality Method (LC-MS/MS)	PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
	PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA <0.0010 μg/L AsureQuality Method (LC-MS/MS)	PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
	PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report: https://www.asurequality.com/about/terms-of-business/

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			, , , , , , , , , , , , , , , , , , ,
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			, ,
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	NR	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	NR	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			· · · · · · · · · · · · · · · · · · ·
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards		10	
M3PFBS	100	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	87	%	AsureQuality Method (LC-MS/MS)
M8PFOS	110	%	AsureQuality Method (LC-MS/MS)
M4PFBA	88	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	89	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	89	%	AsureQuality Method (LC-MS/MS)
MPFHpA	87	%	AsureQuality Method (LC-MS/MS)
	88		
M8PFOA		%	AsureQuality Method (LC-MS/MS)
M9PFNA	104	%	AsureQuality Method (LC-MS/MS)
M6PFDA	107	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	133	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	242 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	740 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	109	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	92	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	114	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	139	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	133	%	AsureQuality Method (LC-MS/MS)
			. , ,

Test	Result	Unit	Method Reference
M4:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	91	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

## **QC Results**

#### **Blank**

Relates to sample(s) 24-103810-1

est	Result	Unit	Method Reference
ly- and Perfluorinated Alkyl Substances (PFAS) in Pota	able Water		
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

rest	Result	Unit	Method Reference	
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Perfluorooctanesulfonamidoethanols		F-3'-		
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Telomere Sulfonic acids		F-3'-		
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
10:2 FTS	NR	µg/L	AsureQuality Method (LC-MS/MS)	
Telomere Carboxylic acids				
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
FHpPA (7:3FTA)	NR	μg/L	AsureQuality Method (LC-MS/MS)	
Miscellaneous		F-3'-		
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)	
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)	
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Internal Standards		13		
M3PFBS	100	%	AsureQuality Method (LC-MS/MS)	
M3PFHxS	100	%	AsureQuality Method (LC-MS/MS)	
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)	
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)	
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)	
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)	
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)	
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)	
M9PFNA	100	%	AsureQuality Method (LC-MS/MS)	
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)	
M7PFUnDA	100	%	AsureQuality Method (LC-MS/MS)	
MPFDoDA	100	%	AsureQuality Method (LC-MS/MS)	
MPFTeDA	100	%	AsureQuality Method (LC-MS/MS)	
MPFOSA	100	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSA	100	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSA	100	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSAA	100	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSAA	100	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSE	100	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSE	100	%	AsureQuality Method (LC-MS/MS)	
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)	
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)	
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)	
M3HFPO-DA	100	%	AsureQuality Method (LC-MS/MS)	
			<u> </u>	

AsureQuality Reference: 24-103810 Report Issued: 09-May-2024

### **Analysis Summary**

## **Wellington Laboratory**

Analysis Method Accreditation Authorised by

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water

DX-PFCS01, 03-SUITE\_B AsureQuality Method (LC-MS/MS) IANZ Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9CI-PF3ONS (F-53B major) and 11CI-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

Aller

Amelie Sellier

Scientist

## Accreditation





Report Issued: 09-May-2024

## **Appendix**

## **Analyte LOR Summary**

Poly, and Perfluoringted Alley Substances	s (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)
FUIV- ALIU FELIUULIIIALEU AIKVI SUDSLALICES	S (FFAS) III FULADIE WALEI - ASUIEQUAIILV MELITUU (LC-MIS/MIS)

roly and rolliadilliated ruly capetalloce (1776)	, in a capic water a real cadality medica (20 me)
Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 μg/L
PFBS	0.0010 μg/L
PFPeS	0.0010 μg/L
di-PFHxS (1)	0.0010 μg/L
mono-PFHxS (1)	0.0010 μg/L
L-PFHxS (1)	0.0010 μg/L
Total PFHxS (3)	0.0010 μg/L
PFHpS	0.0010 μg/L
di-PFOS (5)	0.0010 μg/L
mono-PFOS (5)	0.0010 μg/L
L-PFOS (5)	0.0010 μg/L
Total PFOS (7)	0.0010 μg/L
Sum PFHxS+PFOS (1)	0.0010 μg/L
PFNS	0.0010 μg/L
PFDS	NR µg/L
PFECHS	0.0010 μg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 μg/L
PFPeA	0.0010 μg/L
PFHxA	0.0010 μg/L
PFHpA	0.0010 μg/L
PFOA	0.0010 μg/L
PFNA	0.0010 μg/L
PFDA	0.0010 μg/L
PFUnDA	0.0010 μg/L
PFDoDA	0.0010 μg/L
PFTrDA	NR µg/L
PFTeDA	NR µg/L
P37DMOA	NR μg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 μg/L
NEtFOSA-M	NR µg/L
NMeFOSA-M	0.0010 μg/L
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 μg/L
NMeFOSAA	0.0010 μg/L
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	0.0010 μg/L
NMeFOSE-M	0.0010 μg/L
Telomere Sulfonic acids	
4:2 FTS	0.0010 μg/L
6:2 FTS	0.0010 μg/L
8:2 FTS	0.0010 μg/L
10:2 FTS	NR µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 μg/L
FPePA (5:3FTA)	0.0010 μg/L

FHpPA (7:3FTA)	NR μg/L
Miscellaneous	
F-53B (major)	0.0010 μg/L
F-53B (minor)	0.0010 μg/L
Sum F-53B	0.0010 μg/L
ADONA	0.0010 μg/L
HFPO-DA (GenX)	0.0010 μg/L

## **Analyte Definitions**

#### Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte Full Name

Perfluoroalkylsulfonic acids

PFPrS Perfluoro-1-propanesulfonic acid
PFBS Perfluoro-1-butanesulfonic acid
PFPeS Perfluoro-1-pentanesulfonic acid

di-PFHxS (1)
Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)
Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)
Linear Perfluorohexanesulfonic acid
PFHpS
Perfluoro-1-heptanesulfonic acid

di-PFOS (5)

Total Perfluorodimethylhexane sulfonic acids mono-PFOS (5)

Total Perfluoromethylheptane sulfonic acids L-PFOS (5)

Linear Perfluoroctanesulfonic acid

PFNS

Perfluoro-1-nonanesulfonic acid

PFDS

Perfluoro-1-decanesulfonic acid

PFECHS Perfluoro-4-ethylcyclohexanesulfonic acid

Perfluoroalkylcarboxylic acids

PFBA Perfluoro-n-butanoic acid PFPeA Perfluoro-n-pentanoic acid PFHxA Perfluoro-n-hexanoic acid PFHpA Perfluoro-n-heptanoic acid PFOA Perfluoro-n-octanoic acid PFNA Perfluoro-n-nonanoic acid PFDA Perfluoro-n-decanoic acid PFUnDA Perfluoro-n-undecanoic acid PFDoDA Perfluoro-n-dodecanoic acid PFTrDA Perfluoro-n-tridecanoic acid PFTeDA Perfluoro-n-tetradecanoic acid P37DMOA Perfluoro-3,7-dimethyloctanoic acid

Perfluorooctanesulfonamides

PFOSA Perfluoro-1-octanesulfonamide

NEtFOSA-M N-ethylperfluoro-1-octanesulfonamide

NMeFOSA-M N-methylperfluoro-1-octanesulfonamide

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA N-methylperfluoro-1-octanesulfonamidoacetic acid

Perfluorooctanesulfonamidoethanols

 NEtFOSE-M
 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol

 NMeFOSE-M
 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

Telomere Sulfonic acids

4:2 FTS 1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS 1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS 1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS 1H,1H,2H,2H-perfluorododecanesulfonic acid

Telomere Carboxylic acids

FPrPA (3:3FTA) 3-Perfluoropropyl propanoic acid

AsureQuality Reference: 24-	103810	Report Issued: 09-May-2024
Analyte	Full Name	
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid	
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid	
Miscellaneous		
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	
F-53B (minor)	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	
Sum F-53B	Sum of F-53B components (major + minor)	
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid	
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid	
Internal Standards		
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid	
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid	
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid	
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid	
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid	
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid	
MPFHpA	Perfluoro-n-[-1,2,3,4-13C4]heptanoic acid	
M8PFOA	Perfluoro-n-[13C8]octanoic acid	
M9PFNA	Perfluoro-n-[13C9]nonanoic acid	
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid	
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid	
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid	
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid	
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide	
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide	
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide	
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid	
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid	
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol	
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol	
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid	
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid	
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid	
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid	

NR = Not Reportable

LOD = Limit of Detection

LOR = Limit of Reporting



# Certificate of Analysis

**Submission Reference: A02744124** 

**Final Report** 

**NZDF ESDAT Pattle Delamore Partners Limited** P O Box 9528 Auckland 1149 **New Zealand** 

PO Number: OHA\_PFAS

Report Issued: 09-May-2024 Sample(s) Received: 12-Apr-2024 08:15 AsureQuality Reference: 24-102486

Testing Period: 15-Apr-2024 to 09-May-2024 Date of analysis is available on request.

## Results

Report Number: 3749239

The tests were performed on the samples as received.

Customer Sample Name: OHA_GW111.1_100424 Lab ID: 24-102			
Sample Condition: Acceptable	Sampled Date: 10-Apr-2024		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (I	PFAS) in Potable Water		
Perfluoroalkylsulfonic acids			
PFPrS	0.0017	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0064	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.0065	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.011	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.068	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.079	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0018	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0037	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.053	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.080	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.14	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.22	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0050	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.087	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.29	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.19	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.070	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.015	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report: https://www.asurequality.com/about/terms-of-business/

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA			
	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
	<0.0010		
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids  NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols	0.00.0	P9'-	rical equality medical (20 me/me)
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids		P3'-	
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.0023	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids	0.00.0	P9/-	rical equality method (20 merme)
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous		10	, , ,
F-53B (major)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			, , ,
M3PFBS	103	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	107	%	AsureQuality Method (LC-MS/MS)
M8PFOS	124	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	97	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	92	%	AsureQuality Method (LC-MS/MS)
MPFHpA	102	%	AsureQuality Method (LC-MS/MS)
M8PFOA	95	%	AsureQuality Method (LC-MS/MS)
M9PFNA	101	%	AsureQuality Method (LC-MS/MS)
M6PFDA	126	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	117	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	121	%	AsureQuality Method (LC-MS/MS)
MPFTeDA  MBEOSA	104	%	AsureQuality Method (LC-MS/MS)
MPFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	70	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	83	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	111	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	112	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	82	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	82	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M4:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	107	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	150	%	AsureQuality Method (LC-MS/MS)
Customer Sample Name: OHA_GW111.2_100424			<b>Lab ID:</b> 24-102486-
Sample Condition: Acceptable S	ampled Date: 10-Apr-2024		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potab	le Water		
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010		AsureQuality Method (LC-MS/MS)
	<0.0010	μg/L	
Sum PFHxS+PFOS (1)		μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L 	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids	.0.0040		
PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.0016	μg/L 	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	121	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	129	%	AsureQuality Method (LC-MS/MS)
M8PFOS	162 (R)	%	AsureQuality Method (LC-MS/MS)
M4PFBA	106	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	93	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	109	%	AsureQuality Method (LC-MS/MS)
MPFHpA	114	%	AsureQuality Method (LC-MS/MS)
M8PFOA	110	%	AsureQuality Method (LC-MS/MS)
M9PFNA	110	%	AsureQuality Method (LC-MS/MS)
M6PFDA	126	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	131	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	102	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	135	%	AsureQuality Method (LC-MS/MS)
MPFOSA	38	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	19 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	55	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	50	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	76	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	16 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	12 (R)	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	123	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	144	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	105	%	AsureQuality Method (LC-MS/MS)
R = Recovery outside method limits			
Customer Sample Name: OHA_GW111.3_100424			<b>Lab ID:</b> 24-102486-3
Sample Condition: Acceptable	Sampled Date: 10-Apr-2024		Edb 15. 21 102100 0
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Po			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
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Test	Result	Unit	Method Reference
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020		AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	
		μg/L	AsuraQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010		AsureQuality Method (LC-MS/MS)
	<0.0010	μg/L	
PFHxA		μg/L	AsuraQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L 	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L 	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols	-0.0040		A O I'd - Madda - d (I O MO/MO)
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids 4:2 FTS	<0.0010	ug/l	AcureQuality Method (LC MS/MS)
		μg/L	AsureQuality Method (LC-MS/MS)  AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	, , ,
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids	<0.0010	ua/l	AcuraQuality Method (LC MS/MS)
FPrPA (3:3FTA)	<0.0010	μg/L μα/l	AsureQuality Method (LC-MS/MS)  AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	
FHpPA (7:3FTA)	~0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)  AsureQuality Method (LC-MS/MS)
	<0.0010		AsureQuality Method (LC-MS/MS)  AsureQuality Method (LC-MS/MS)
Sum F-53B		μg/L	
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Reference: 24-102486			Report Issued: 09-May-202
Test	Result	Unit	Method Reference
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	117	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	118	%	AsureQuality Method (LC-MS/MS)
M8PFOS	172 (R)	%	AsureQuality Method (LC-MS/MS)
M4PFBA	107	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	96	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	101	%	AsureQuality Method (LC-MS/MS)
MPFHpA	110	%	AsureQuality Method (LC-MS/MS)
M8PFOA	108	%	AsureQuality Method (LC-MS/MS)
M9PFNA	119	%	AsureQuality Method (LC-MS/MS)
M6PFDA	123	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	157 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	194 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	62	%	AsureQuality Method (LC-MS/MS)
MPFOSA	60	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	55	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	52	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	128	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	121	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	30	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	32	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	106	%	AsureQuality Method (LC-MS/MS)
R = Recovery outside method limits			
rustomer Sample Name: Duplicate.of 24-102486-1A			<b>Lab ID:</b> 24-102486-4
ample Description: 24337662_Duplicate			
ample Condition: Acceptable	Sampled Date: 10-Apr-2024		
Test	Result	Unit	Method Reference

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Result	Unit	Method Reference
n Potable Water		
0.0018	μg/L	AsureQuality Method (LC-MS/MS)
0.0067	μg/L	AsureQuality Method (LC-MS/MS)
0.0060	μg/L	AsureQuality Method (LC-MS/MS)
<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
0.011	μg/L	AsureQuality Method (LC-MS/MS)
0.063	μg/L	AsureQuality Method (LC-MS/MS)
0.074	μg/L	AsureQuality Method (LC-MS/MS)
0.0015	μg/L	AsureQuality Method (LC-MS/MS)
0.0041	μg/L	AsureQuality Method (LC-MS/MS)
0.056	μg/L	AsureQuality Method (LC-MS/MS)
0.078	μg/L	AsureQuality Method (LC-MS/MS)
0.14	μg/L	AsureQuality Method (LC-MS/MS)
0.21	μg/L	AsureQuality Method (LC-MS/MS)
<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
<0.0050	μg/L	AsureQuality Method (LC-MS/MS)
<0.0050	μg/L	AsureQuality Method (LC-MS/MS)
	0.0018 0.0067 0.0060 <0.0010 0.011 0.063 0.074 0.0015 0.0041 0.056 0.078 0.14 0.21 <0.0010 <0.0050	0.0018 μg/L 0.0067 μg/L 0.0060 μg/L <0.0010 μg/L 0.011 μg/L 0.063 μg/L 0.074 μg/L 0.0015 μg/L 0.0041 μg/L 0.056 μg/L 0.078 μg/L 0.14 μg/L 0.21 μg/L <0.0010 μg/L <0.0010 μg/L

Test	Result	Unit	Method Reference
Perfluoroalkylcarboxylic acids			
PFBA	0.088	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.29	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.18	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.099	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.068	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.014	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
			AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	
PFTrDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L 	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols	.0.0040		A 0 1/4 M 1/4 ( 0 M 0 M 0 M 0 )
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids	<b>40.0040</b>		Apura Quality Mathed (I C MC/MC)
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.0022	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L 	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids	10.0040		Assura Oscalita Matha et (LO MO/MO)
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous	10.0040		Asserts Oscalita Mother of (LO MO(MO)
F-53B (major)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	95	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	97	%	AsureQuality Method (LC-MS/MS)
M8PFOS	86	%	AsureQuality Method (LC-MS/MS)
M4PFBA	97	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	95	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	91	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	89	%	AsureQuality Method (LC-MS/MS)
M9PFNA	92	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	89	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
MPFDoDA	64	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	38	%	AsureQuality Method (LC-MS/MS)
MPFOSA	78	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	47	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	53	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	82	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	85	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	53	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	57	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	88	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	87	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	120	%	AsureQuality Method (LC-MS/MS)

## **QC** Results

Report Number: 3749239

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Relates to sample(s) 24-102486-1, 24-102486-4

est	Result	Unit	Method Reference
oly- and Perfluorinated Alkyl Substances (PFAS	) in Potable Water		
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0050	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
PFTeDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	97	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	88	%	AsureQuality Method (LC-MS/MS)
M8PFOS	93	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	101	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	96	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	95	%	AsureQuality Method (LC-MS/MS)
M9PFNA	93	%	AsureQuality Method (LC-MS/MS)
M6PFDA	105	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	91	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	98	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	89	%	AsureQuality Method (LC-MS/MS)
MPFOSA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	117	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	117	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	124	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
DNMeFOSE	111	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	133	%	AsureQuality Method (LC-MS/MS)

### Blank

st	Result	Unit	Method Reference
ly- and Perfluorinated Alkyl Substances (PFAS) in Potab	ole Water		
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

<u> </u>			
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards		P-5-	
M3PFBS	97	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	74	%	AsureQuality Method (LC-MS/MS)
M8PFOS	44	%	AsureQuality Method (LC-MS/MS)
M4PFBA	107	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	102	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	101	%	AsureQuality Method (LC-MS/MS)
MPFHpA	101	%	AsureQuality Method (LC-MS/MS)
M8PFOA	83	%	AsureQuality Method (LC-MS/MS)
M9PFNA	68	%	AsureQuality Method (LC-MS/MS)
M6PFDA	53	% %	AsureQuality Method (LC-MS/MS)
M7PFUnDA	28 (R)	% %	AsureQuality Method (LC-MS/MS)
MPFDoDA	18 (R)	% %	AsureQuality Method (LC-MS/MS)
MPFTeDA	15 (R)	% %	AsureQuality Method (LC-MS/MS)
MPFOSA	58	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	21 (R)		AsureQuality Method (LC-MS/MS)
DNMeFOSA	29 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	33	%	, , ,
		%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	49	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	45	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	46	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	106	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	96	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	99	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

AsureQuality Reference: 24-102486 Report Issued: 09-May-2024

### **Analysis Summary**

## **Wellington Laboratory**

Analysis Method Accreditation Authorised by

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water

DX-PFCS01, 03-SUITE\_B AsureQuality Method (LC-MS/MS)

IANZ Amelie Sellier, Christopher Sampson

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9CI-PF3ONS (F-53B major) and 11CI-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

Amelie Sellier

Scientist

Christopher Sampson

Scientist

## Accreditation



Report Number: 3749239



Report Issued: 09-May-2024

## **Appendix**

## **Analyte LOR Summary**

Poly- and Perfluorinated Alkyl Substances	(PFAS) in Potable Water -	AsureQuality Method (LC-MS/MS)

Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 μg/L
PFBS	0.0010 μg/L
PFPeS	0.0010 μg/L
di-PFHxS (1)	0.0010 μg/L
mono-PFHxS (1)	0.0010 μg/L
L-PFHxS (1)	0.0010 μg/L
Total PFHxS (3)	0.0010 μg/L
PFHpS	0.0010 μg/L
di-PFOS (5)	0.0010 μg/L
mono-PFOS (5)	0.0010 μg/L
L-PFOS (5)	0.0010 μg/L
Total PFOS (7)	0.0010 μg/L
Sum PFHxS+PFOS (1)	0.0010 μg/L
PFNS	0.0010 μg/L
PFDS	0.0010 μg/L
PFECHS	0.0010 μg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 μg/L
PFPeA	0.0010 μg/L
PFHxA	0.0010 μg/L
PFHpA	0.0010 μg/L
PFOA	0.0010 μg/L
PFNA	0.0010 μg/L
PFDA	0.0010 μg/L
PFUnDA	0.0010 μg/L
PFDoDA	0.0010 μg/L
PFTrDA	0.0010 μg/L
PFTeDA	0.0010 μg/L
P37DMOA	0.0010 μg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 μg/L
NEtFOSA-M	0.0010 μg/L
NMeFOSA-M	0.0010 μg/L
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 μg/L
NMeFOSAA	0.0010 μg/L
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	0.0010 μg/L
NMeFOSE-M	0.0010 μg/L
Telomere Sulfonic acids	
4:2 FTS	0.0010 μg/L
6:2 FTS	0.0010 μg/L
8:2 FTS	0.0010 μg/L
10:2 FTS	0.0010 μg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 μg/L
FPePA (5:3FTA)	0.0010 μg/L

FHpPA (7:3FTA)	0.0010 μg/L
Miscellaneous	
F-53B (major)	0.0010 μg/L
F-53B (minor)	0.0010 μg/L
Sum F-53B	0.0010 μg/L
ADONA	0.0010 μg/L
HFPO-DA (GenX)	0.0010 μg/L

## **Analyte Definitions**

#### Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte Full Name

Perfluoroalkylsulfonic acids

PFPS Perfluoro-1-propanesulfonic acid
PFBS Perfluoro-1-butanesulfonic acid
PFPeS Perfluoro-1-pentanesulfonic acid

 di-PFHxS (1)
 Total Perfluorodimethylbutane sulfonic acids

 mono-PFHxS (1)
 Total Perfluoromethylpentane sulfonic acids

 L-PFHxS (1)
 Linear Perfluorohexanesulfonic acid

 PFHpS
 Perfluoro-1-heptanesulfonic acid

di-PFOS (5)

Total Perfluorodimethylhexane sulfonic acids mono-PFOS (5)

Total Perfluoromethylheptane sulfonic acids L-PFOS (5)

Linear Perfluoroctanesulfonic acid

PFNS

Perfluoro-1-nonanesulfonic acid

PFDS

Perfluoro-1-decanesulfonic acid

PFECHS Perfluoro-4-ethylcyclohexanesulfonic acid

Perfluoroalkylcarboxylic acids

PFBA Perfluoro-n-butanoic acid PFPeA Perfluoro-n-pentanoic acid PFHxA Perfluoro-n-hexanoic acid PFHpA Perfluoro-n-heptanoic acid PFOA Perfluoro-n-octanoic acid PFNA Perfluoro-n-nonanoic acid PFDA Perfluoro-n-decanoic acid PFUnDA Perfluoro-n-undecanoic acid PFDoDA Perfluoro-n-dodecanoic acid PFTrDA Perfluoro-n-tridecanoic acid PFTeDA Perfluoro-n-tetradecanoic acid P37DMOA Perfluoro-3,7-dimethyloctanoic acid

Perfluorooctanesulfonamides

PFOSA Perfluoro-1-octanesulfonamide

NEtFOSA-M N-ethylperfluoro-1-octanesulfonamide

NMeFOSA-M N-methylperfluoro-1-octanesulfonamide

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA N-methylperfluoro-1-octanesulfonamidoacetic acid

Perfluorooctanesulfonamidoethanols

 NEtFOSE-M
 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol

 NMeFOSE-M
 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

Telomere Sulfonic acids

4:2 FTS 1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS 1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS 1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS 1H,1H,2H,2H-perfluorododecanesulfonic acid

Telomere Carboxylic acids

FPrPA (3:3FTA) 3-Perfluoropropyl propanoic acid

AsureQuality Reference: 24-102486 Report Issued: 09-May-2024

AsureQuality Reference. 24-10.	2400	Report Issued. 05-Way-2024
Analyte	Full Name	
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid	
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid	
Miscellaneous		
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	
F-53B (minor)	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	
Sum F-53B	Sum of F-53B components (major + minor)	
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid	
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid	
Internal Standards		
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid	
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid	
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid	
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid	
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid	
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid	
MPFHpA	Perfluoro-n-[-1,2,3,4-13C4]heptanoic acid	
M8PFOA	Perfluoro-n-[13C8]octanoic acid	
M9PFNA	Perfluoro-n-[13C9]nonanoic acid	
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid	
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid	
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid	
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid	
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide	
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide	
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide	
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid	
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid	
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol	
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol	
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid	
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid	
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid	
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid	
LOR = Limit of Reporting	LOD = Limit of Detection NR = Not Reportable	



# Certificate of Analysis

**Submission Reference: A02744125** 

**Final Report** 

**NZDF ESDAT Pattle Delamore Partners Limited** P O Box 9528 Auckland 1149 **New Zealand** 

PO Number: OHA\_PFAS

Report Issued: 09-May-2024 Sample(s) Received: 12-Apr-2024 08:15 AsureQuality Reference: 24-102552

Testing Period: 12-Apr-2024 to 09-May-2024 Date of analysis is available on request.

## Results

Report Number: 3749218

The tests were performed on the samples as received.

Customer Sample Name: OHA_GW112.1_1	00424		<b>Lab ID:</b> 24-102552-1
Sample Condition: Acceptable	Sampled Date: 10-Apr-2024		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (F	PFAS) in Non Potable Water - High Level		
Perfluoroalkylsulfonic acids			
PFPrS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.026	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.028	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.043	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.26	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.30	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.092	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.15	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.24	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.54	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.13	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.42	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.34	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.16	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.079	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.030	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report: https://www.asurequality.com/about/terms-of-business/

Test	Result	Unit	Method Reference
PFDoDA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides		7.0	,
PFOSA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.12	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	114	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	112	%	AsureQuality Method (LC-MS/MS)
M8PFOS	117	%	AsureQuality Method (LC-MS/MS)
M4PFBA	111	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	114	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	114	%	AsureQuality Method (LC-MS/MS)
MPFHpA	112	%	AsureQuality Method (LC-MS/MS)
M8PFOA	108	%	AsureQuality Method (LC-MS/MS)
M9PFNA	112	%	AsureQuality Method (LC-MS/MS)
M6PFDA	122	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	121	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	116	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	129	%	AsureQuality Method (LC-MS/MS)
MPFOSA	109	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	111	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	113	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	117	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	118	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	110	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	112	%	AsureQuality Method (LC-MS/MS)
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Report Number: 3749218

Test	Result	Unit	Method Reference
M4:2FTS	107	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	90	%	AsureQuality Method (LC-MS/MS)
Customer Sample Name: OHA_GW112.2_100424			<b>Lab ID:</b> 24-102552-2
	Sampled Date: 10-Apr-2024		<u> </u>
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Pote	able Water		
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010		AsureQuality Method (LC-MS/MS)
		μg/L //	,
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	μg/L 	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			, , ,
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			. ,
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
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Test	Result	Unit	Method Reference
Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
3:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	125	%	AsureQuality Method (LC-MS/MS)
//3PFHxS	126	%	AsureQuality Method (LC-MS/MS)
M8PFOS	165 (R)	%	AsureQuality Method (LC-MS/MS)
M4PFBA	115	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	103	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	112	%	AsureQuality Method (LC-MS/MS)
ИРFHpA	116	%	AsureQuality Method (LC-MS/MS)
18PFOA	119	%	AsureQuality Method (LC-MS/MS)
19PFNA	117	%	AsureQuality Method (LC-MS/MS)
M6PFDA	130	%	AsureQuality Method (LC-MS/MS)
//7PFUnDA	182 (R)	%	AsureQuality Method (LC-MS/MS)
ИРFDoDA	235 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	44	%	AsureQuality Method (LC-MS/MS)
MPFOSA	88	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	39	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	27 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	87	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	45	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	40	%	AsureQuality Method (LC-MS/MS)
	127	%	
M4:2FTS			AsureQuality Method (LC-MS/MS)
M6:2FTS	122	%	AsuraQuality Method (LC-MS/MS)
M8:2FTS	156 (R)	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	117	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

# **QC** Results

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Relates to sample(s) 24-102552-1

Test	Result	Unit	Method Reference		
Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level					
Perfluoroalkylsulfonic acids					
PFPrS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)		

Test	Result	Unit	Method Reference
PFBS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFD <sub>0</sub> DA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)

Miscellaneous			
F-53B (major)	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	111	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	102	%	AsureQuality Method (LC-MS/MS)
M8PFOS	105	%	AsureQuality Method (LC-MS/MS)
M4PFBA	109	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	109	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	111	%	AsureQuality Method (LC-MS/MS)
MPFHpA	108	%	AsureQuality Method (LC-MS/MS)
M8PFOA	111	%	AsureQuality Method (LC-MS/MS)
M9PFNA	108	%	AsureQuality Method (LC-MS/MS)
M6PFDA	102	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	110	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	103	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	99	%	AsureQuality Method (LC-MS/MS)
MPFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	101	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	118	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	87	%	AsureQuality Method (LC-MS/MS)

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Relates to sample(s) 24-102552-2

est	Result	Unit	Method Reference	
oly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water				
Perfluoroalkylsulfonic acids				
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	

est	Result	Unit	Method Reference
Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards		· · · · · · · · · · · · · · · · · · ·	
M3PFBS	97	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	74	%	AsureQuality Method (LC-MS/MS)
M8PFOS	44	%	AsureQuality Method (LC-MS/MS)
M4PFBA	107	%	AsureQuality Method (LC-MS/MS)
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AsureQuality Reference: 24-102552 Report Issued: 09-May-2024

est	Result	Unit	Method Reference
M5PFPeA	102	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	101	%	AsureQuality Method (LC-MS/MS)
MPFHpA	101	%	AsureQuality Method (LC-MS/MS)
M8PFOA	83	%	AsureQuality Method (LC-MS/MS)
M9PFNA	68	%	AsureQuality Method (LC-MS/MS)
M6PFDA	53	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	28 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	18 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	15 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	58	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	21 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	29 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	33	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	49	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	45	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	46	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	106	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	96	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	99	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

## **Analysis Summary**

Analysis	Method	Accreditation	Authorised by	
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water				
DX-PFCS01, 03-SUITE_B	AsureQuality Method (LC-MS/MS)	IANZ	Amelie Sellier	

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

 $mono-PFHxS \ (1) = Concentration \ determined \ using \ a \ branched \ mono-PFHxS \ isomer \ standard \ (399>80 \ transition)$ 

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

 $\hbox{di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)}$ 

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

 $Sum \ F\text{-}53B \ = \text{The numerical sum of 9CI-PF3ONS (F-53B major) and 11CI-PF3OUdS (F-53B minor)}$ 

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

AsureQuality Reference: 24-102552 Report Issued: 09-May-2024

Analysis Method Accreditation Authorised by

Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level

DX-PFCS01, 05-HIGHLEVEL AsureQuality Method (LC-MS/MS) IANZ Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9CI-PF3ONS (F-53B major) and 11CI-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

Allo

Amelie Sellier Scientist

#### **Accreditation**



Report Number: 3749218



Report Issued: 09-May-2024

## **Appendix**

## **Analyte LOR Summary**

#### Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte LOR

Listing applies to samples: 24-102552-2

Perfluoroalkylsulfonic acids

PFPrS 0.0010 µg/L PFBS 0.0010 µg/L 0.0010 µg/L PFPeS di-PFHxS (1) 0.0010 µg/L mono-PFHxS (1) 0.0010 µg/L L-PFHxS (1) 0.0010 µg/L Total PFHxS (3) 0.0010 µg/L PFHpS 0.0010 µg/L di-PFOS (5) 0.0010 µg/L mono-PFOS (5) 0.0010 µg/L L-PFOS (5) 0.0010 μg/L Total PFOS (7) 0.0010 µg/L Sum PFHxS+PFOS (1) 0.0010 µg/L **PFNS**  $0.0010 \mu g/L$ PFDS NR µg/L **PFECHS** 0.0010 µg/L

Perfluoroalkylcarboxylic acids

PFBA 0.0010 µg/L PFPeA 0.0010 µg/L PFHxA  $0.0010 \mu g/L$ PFHpA 0.0010 µg/L PFOA 0.0010 µg/L PFNA 0.0010 μg/L PFDA 0.0010 µg/L PFUnDA 0.0010 µg/L PFDoDA 0.0010 µg/L PFTrDA 0.0010 µg/L PFTeDA NR µg/L P37DMOA 0.0010 µg/L

Perfluorooctanesulfonamides

 PFOSA
 0.0010 μg/L

 NEtFOSA-M
 NR μg/L

 NMeFOSA-M
 NR μg/L

Perfluorooctanesulfonamidoacetic acids

 NEtFOSAA
 0.0010 μg/L

 NMeFOSAA
 0.0010 μg/L

Perfluorooctanesulfonamidoethanols

NEtFOSE-M 0.0010  $\mu$ g/L NMeFOSE-M 0.0010  $\mu$ g/L

Telomere Sulfonic acids

 4:2 FTS
 0.0010 μg/L

 6:2 FTS
 0.0010 μg/L

 8:2 FTS
 0.0010 μg/L

 10:2 FTS
 0.0010 μg/L

Telomere Carboxylic acids

FPrPA (3:3FTA) 0.0010 μg/L

FPePA (5:3FTA)	0.0010 μg/L	
FHpPA (7:3FTA)	0.0010 μg/L	
Miscellaneous		
F-53B (major)	0.0010 μg/L	
F-53B (minor)	0.0010 μg/L	
Sum F-53B	0.0010 μg/L	
ADONA	0.0010 μg/L	
HFPO-DA (GenX)	0.0010 μg/L	

## Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level - AsureQuality Method (LC-MS/MS)

Analyte LOR

Listing applies to samples: 24-102552-1

# Perfluoroalkylsulfonic acids

PFPrS 0.025 µg/L PFBS 0.025 µg/L **PFPeS** 0.025 µg/L di-PFHxS (1) 0.025 µg/L mono-PFHxS (1) 0.025 µg/L L-PFHxS (1) 0.025 µg/L Total PFHxS (3) 0.025 µg/L PFHpS 0.025 μg/L 0.025 μg/L di-PFOS (5) mono-PFOS (5) 0.025 µg/L L-PFOS (5) 0.025 µg/L Total PFOS (7)  $0.025~\mu g/L$ Sum PFHxS+PFOS (1) 0.025 µg/L PFNS 0.050 µg/L PFDS 0.10 μg/L **PFECHS** 0.025 µg/L

## Perfluoroalkylcarboxylic acids

PFBA  $0.10 \, \mu g/L$ PFPeA 0.10 µg/L PFHxA 0.025 µg/L PFHpA 0.025 μg/L PFOA 0.025 µg/L PFNA 0.025 µg/L PFDA 0.025 µg/L PFUnDA 0.025 µg/L PFDoDA 0.10 µg/L PFTrDA  $0.10 \, \mu g/L$ PFTeDA 0.10 µg/L P37DMOA  $0.050~\mu g/L$ 

## Perfluorooctanesulfonamides

PFOSA 0.025  $\mu$ g/L NEtFOSA-M 0.10  $\mu$ g/L NMeFOSA-M 0.10  $\mu$ g/L

#### Perfluorooctanesulfonamidoacetic acids

NEtFOSAA 0.025  $\mu$ g/L NMeFOSAA 0.025  $\mu$ g/L

#### Perfluorooctanesulfonamidoethanols

NEtFOSE-M 0.10  $\mu$ g/L NMeFOSE-M 0.10  $\mu$ g/L

Telomere Sulfonic acids

Report Number: 3749218

 4:2 FTS
 0.025 μg/L

 6:2 FTS
 0.050 μg/L

 8:2 FTS
 0.10 μg/L

 10:2 FTS
 0.025 μg/L

Telomere Carboxylic acids

 FPrPA (3:3FTA)
 0.10 μg/L

 FPePA (5:3FTA)
 0.025 μg/L

 FHpPA (7:3FTA)
 0.025 μg/L

Miscellaneous

F-53B (major) 0.10 µg/L
F-53B (minor) 0.050 µg/L
Sum F-53B 0.1 µg/L
ADONA 0.025 µg/L
HFPO-DA (GenX) 0.050 µg/L

#### **Analyte Definitions**

## Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte Full Name

Listing applies to samples: 24-102552-2

Perfluoroalkylsulfonic acids

PFPrS Perfluoro-1-propanesulfonic acid
PFBS Perfluoro-1-butanesulfonic acid
PFPeS Perfluoro-1-pentanesulfonic acid

di-PFHxS (1)
Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)
Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)
Linear Perfluorohexanesulfonic acid
PFHpS
Perfluoro-1-heptanesulfonic acid

di-PFOS (5)

Total Perfluorodimethylhexane sulfonic acids mono-PFOS (5)

Total Perfluoromethylheptane sulfonic acids L-PFOS (5)

Linear Perfluoroctanesulfonic acid

PFNS

Perfluoro-1-nonanesulfonic acid

PFDS

Perfluoro-1-decanesulfonic acid

PFECHS Perfluoro-4-ethylcyclohexanesulfonic acid

Perfluoroalkylcarboxylic acids

PFBA Perfluoro-n-butanoic acid PFPeA Perfluoro-n-pentanoic acid PFHxA Perfluoro-n-hexanoic acid PFHpA Perfluoro-n-heptanoic acid PFOA Perfluoro-n-octanoic acid PFNA Perfluoro-n-nonanoic acid PFDA Perfluoro-n-decanoic acid PFUnDA Perfluoro-n-undecanoic acid PFDoDA Perfluoro-n-dodecanoic acid PFTrDA Perfluoro-n-tridecanoic acid PFTeDA Perfluoro-n-tetradecanoic acid P37DMOA Perfluoro-3,7-dimethyloctanoic acid

Perfluorooctanesulfonamides

PFOSA Perfluoro-1-octanesulfonamide

NEtFOSA-M N-ethylperfluoro-1-octanesulfonamide

NMeFOSA-M N-methylperfluoro-1-octanesulfonamide

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA N-methylperfluoro-1-octanesulfonamidoacetic acid

Perfluorooctanesulfonamidoethanols

AsureQuality Reference: 24-102552 Report Issued: 09-May-2024

Analyte Full Name

NEtFOSE-M 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol NMeFOSE-M 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

Telomere Sulfonic acids

4:2 FTS 1H.1H.2H.2H-perfluoro-1-hexanesulfonic acid 6.2 FTS 1H,1H,2H,2H-perfluoro-1-octanesulfonic acid 8:2 FTS 1H,1H,2H,2H-perfluoro-1-decanesulfonic acid 10:2 FTS 1H,1H,2H,2H-perfluorododecanesulfonic acid

Telomere Carboxylic acids

FPrPA (3:3FTA) 3-Perfluoropropyl propanoic acid FPePA (5:3FTA) 3-Perfluoropentyl propanoic acid FHpPA (7:3FTA) 3-Perfluoroheptyl propanoic acid

Miscellaneous

F-53B (major) 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid F-53B (minor) 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid Sum F-53B Sum of F-53B components (major + minor) ADONA

Dodecafluoro-3H-4.8-dioxanonanoic acid

HFPO-DA (GenX) Tetrafluoro-2-(heptafluoropropoxy)propanoic acid

Internal Standards

M3PFBS Perfluoro-1-[2,3,4-13C3]butanesulfonic acid M3PFHxS Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid M8PFOS Perfluoro-1-[13C8]octanesulfonic acid M4PFBA Perfluoro-n-[1,2,3,4-13C4]butanoic acid M5PFPeA Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid M5PFHxA Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid MPFHpA Perfluoro-n-[-1,2,3,4-13C4]heptanoic acid M8PFOA Perfluoro-n-[13C8]octanoic acid

M9PFNA Perfluoro-n-[13C9]nonanoic acid M6PFDA Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid

M7PFUnDA Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid MPFDoDA Perfluoro-n-[1,2-13C2]dodecanoic acid MPFTeDA Perfluoro-n-[1,2-13C2]tetradecanoic acid MPFOSA Perfluoro-1-[13C8]octanesulfonamide DNFtFOSA N-ethyl-D5-perfluoro-1-octanesulfonamide DNMeFOSA N-methyl-D3-perfluoro-1-octanesulfonamide DNFtFOSAA N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid

DNMeFOSAA N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid **DNEtFOSE** 2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol DNMeFOSE 2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol M4:2FTS 1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid M6:2FTS 1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid M8:2FTS 1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid M3HFPO-DA Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level - AsureQuality Method (LC-MS/MS)

Analyte **Full Name** 

Listing applies to samples: 24-102552-1

Perfluoroalkylsulfonic acids

**PFPrS** Perfluoro-1-propanesulfonic acid PFBS Perfluoro-1-butanesulfonic acid **PFPeS** Perfluoro-1-pentanesulfonic acid

di-PFHxS (1) Total Perfluorodimethylbutane sulfonic acids mono-PFHxS (1) Total Perfluoromethylpentane sulfonic acids L-PFHxS (1) Linear Perfluorohexanesulfonic acid PFHpS Perfluoro-1-heptanesulfonic acid

di-PFOS (5) Total Perfluorodimethylhexane sulfonic acids AsureQuality Reference: 24-102552 Report Issued: 09-May-2024

Analyte Full Name

mono-PFOS (5)

Total Perfluoromethylheptane sulfonic acids

L-PFOS (5)

Linear Perfluorooctanesulfonic acid

PFNS

Perfluoro-1-nonanesulfonic acid

PFDS

Perfluoro-1-decanesulfonic acid

PFECHS Perfluoro-4-ethylcyclohexanesulfonic acid

Perfluoroalkylcarboxylic acids

PFBA Perfluoro-n-butanoic acid PFPeA Perfluoro-n-pentanoic acid PFHxA Perfluoro-n-hexanoic acid PFHpA Perfluoro-n-heptanoic acid PFOA Perfluoro-n-octanoic acid PFNA Perfluoro-n-nonanoic acid PFDA Perfluoro-n-decanoic acid PFUnDA Perfluoro-n-undecanoic acid PFDoDA Perfluoro-n-dodecanoic acid PFTrDA Perfluoro-n-tridecanoic acid PFTeDA Perfluoro-n-tetradecanoic acid P37DMOA Perfluoro-3,7-dimethyloctanoic acid

Perfluorooctanesulfonamides

PFOSA Perfluoro-1-octanesulfonamide

NEtFOSA-M N-ethylperfluoro-1-octanesulfonamide

NMeFOSA-M N-methylperfluoro-1-octanesulfonamide

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA N-methylperfluoro-1-octanesulfonamidoacetic acid

Perfluorooctanesulfonamidoethanols

NEtFOSE-M 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

Telomere Sulfonic acids

4:2 FTS1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid6:2 FTS1H,1H,2H,2H-perfluoro-1-octanesulfonic acid8:2 FTS1H,1H,2H,2H-perfluoro-1-decanesulfonic acid10:2 FTS1H,1H,2H,2H-perfluorododecanesulfonic acid

Telomere Carboxylic acids

FPrPA (3:3FTA)

3-Perfluoropropyl propanoic acid

FPePA (5:3FTA)

3-Perfluoropentyl propanoic acid

FHpPA (7:3FTA)

3-Perfluoropeptyl propanoic acid

Miscellaneous

F-53B (major) 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor) 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid

 Sum F-53B
 Sum of F-53B components (major + minor)

 ADONA
 Dodecafluoro-3H-4,8-dioxanonanoic acid

HFPO-DA (GenX)
Internal Standards

M3PFBS Perfluoro-1-[2,3,4-13C3]butanesulfonic acid M3PFHxS Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid M8PFOS Perfluoro-1-[13C8]octanesulfonic acid M4PFBA Perfluoro-n-[1,2,3,4-13C4]butanoic acid M5PFPeA Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid M5PFHxA Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid MPFHpA Perfluoro-n-[-1,2,3,4-13C4]heptanoic acid M8PFOA Perfluoro-n-[13C8]octanoic acid M9PFNA Perfluoro-n-[13C9]nonanoic acid

M6PFDA Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid

Tetrafluoro-2-(heptafluoropropoxy)propanoic acid

AsureQuality Reference: 24-102552 Report Issued: 09-May-2024

Analyte	Full Name	Full Name		
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecano	Perfluoro-n-[1,2-13C2]dodecanoic acid		
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecar	Perfluoro-n-[1,2-13C2]tetradecanoic acid		
MPFOSA	Perfluoro-1-[13C8]octanesulfona	nide		
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesu	onamide		
DNMeFOSA	N-methyl-D3-perfluoro-1-octanes	ulfonamide		
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesu	onamidoacetic acid		
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanes	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid		
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octane	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol		
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octa	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol		
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid		
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid		
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid		
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropox	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid		
LOR = Limit of Reporting	LOD = Limit of Detection	NR = Not Reportable		



# Certificate of Analysis

Submission Reference: A02744124

**Final Report** 

Nerena Rhodes **Pattle Delamore Partners Limited** P O Box 9528 Auckland 1149 **New Zealand** 

PO Number: OHA\_PFAS

Report Issued: 24-Apr-2024 AsureQuality Reference: 24-100824 Sample(s) Received: 10-Apr-2024 08:30

Testing Period: 10-Apr-2024 to 24-Apr-2024 Date of analysis is available on request.

## Results

Report Number: 3728334

The tests were performed on the samples as received.

Customer Sample Name: OHA_MW4_09042	24	<b>Lab ID:</b> 24-100824-1	
Sample Condition: Acceptable	Sampled Date: 09-Apr-2024		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (F	PFAS) in Non Potable Water - High Level		
Perfluoroalkylsulfonic acids			
PFPrS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.027	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.031	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.060	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.37	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.43	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.37	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.79	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	1.2	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	1.6	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.14	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.50	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.35	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.17	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.16	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.098	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report: https://www.asurequality.com/about/terms-of-business/

Test

iest	Resuit	UIIIL	Wethou Reference
PFDoDA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.29	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids		, 5	
FPrPA (3:3FTA)	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous		F-3-	,
F-53B (major)	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.050		
	<0.030	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards M3PFBS	109	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	113	% %	AsureQuality Method (LC-MS/MS)  AsureQuality Method (LC-MS/MS)
M8PFOS	109	%	AsureQuality Method (LC-MS/MS)
M4PFBA	110	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	111	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	112	%	AsureQuality Method (LC-MS/MS)
MPFHpA	110	%	AsureQuality Method (LC-MS/MS)
M8PFOA	110	%	AsureQuality Method (LC-MS/MS)
M9PFNA	111	%	AsureQuality Method (LC-MS/MS)
M6PFDA	112	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	120	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	109	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	114	%	AsureQuality Method (LC-MS/MS)
MPFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	105	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	108	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	115	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	107	%	AsureQuality Method (LC-MS/MS)

Unit

Result

NMeFOSE-M

Report Number: 3728334

Test	Result	Unit	Method Reference
M4:2FTS	107	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	116	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	102	%	AsureQuality Method (LC-MS/MS)
customer Sample Name: OHA_AAV_090424			<b>Lab ID:</b> 24-100824-
Sample Condition: Acceptable	Sampled Date: 09-Apr-2024		
Test	Result	Unit	Method Reference
oly- and Perfluorinated Alkyl Substances (PFAS) in N	Ion Potable Water - High Level		
Perfluoroalkylsulfonic acids			
PFPrS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.030	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.061	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.41	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.47	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.39	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.95	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	1.3	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	1.8	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.12	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.49	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.34	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.17	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.17	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.096	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)

<0.10

μg/L

AsureQuality Method (LC-MS/MS)

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di-PFHxS (1)

< 0.0010

μg/L

AsureQuality Method (LC-MS/MS)

			<u> </u>
Test	Result	Unit	Method Reference
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0050	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids		10	, , ,
PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010		AsureQuality Method (LC-MS/MS)
Perfluorocctanesulfonamides	<0.0010	μg/L	Astriequality Method (LC-MS/MS)
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids		F-3'-	
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

PFBA

PFPeA

< 0.0010

< 0.0010

μg/L

μg/L

AsureQuality Method (LC-MS/MS)

AsureQuality Method (LC-MS/MS)

			<u> </u>
Test	Result	Unit	Method Reference
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			, , ,
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	88	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	94	%	AsureQuality Method (LC-MS/MS)
M8PFOS	117	%	AsureQuality Method (LC-MS/MS)
M4PFBA	94	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	95	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	91	%	AsureQuality Method (LC-MS/MS)
MPFHpA	102	%	AsureQuality Method (LC-MS/MS)
M8PFOA	97	%	AsureQuality Method (LC-MS/MS)
M9PFNA	101	%	AsureQuality Method (LC-MS/MS)
M6PFDA	120	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	133	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	117	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	66	%	AsureQuality Method (LC-MS/MS)
MPFOSA	107	%	AsureQuality Method (LC-MS/MS)
mi i SOA	101	70	/ Tours equality Informati (EO-INIO/INIO)

NMeFOSA-M

Report Number: 3728334

μg/L

< 0.0010

AsureQuality Method (LC-MS/MS)

AsureQuality Method (LC-MS/MS)

M3HFPO-DA

%

102

# **QC** Results

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Relates to sample(s) 24-100824-1, 24-100824-2

st	Result	Unit	Method Reference
y- and Perfluorinated Alkyl Substances (PFAS) in Non Pot	able Water - High Level		
Perfluoroalkylsulfonic acids			
PFPrS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.025		AsureQuality Method (LC-MS/MS)
PFDoDA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	μg/L "	
		μg/L 	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			Access Occality Mathead (LO MO(MO)
PFOSA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.050	μg/L	AsureQuality Method (LC-MS/MS)

est	Result	Unit	Method Reference
8:2 FTS	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	111	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	102	%	AsureQuality Method (LC-MS/MS)
M8PFOS	105	%	AsureQuality Method (LC-MS/MS)
M4PFBA	109	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	109	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	111	%	AsureQuality Method (LC-MS/MS)
MPFHpA	108	%	AsureQuality Method (LC-MS/MS)
M8PFOA	111	%	AsureQuality Method (LC-MS/MS)
M9PFNA	108	%	AsureQuality Method (LC-MS/MS)
M6PFDA	102	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	110	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	103	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	99	%	AsureQuality Method (LC-MS/MS)
MPFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	101	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	118	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	87	%	AsureQuality Method (LC-MS/MS)

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Relates to sample(s) 24-100824-3, 24-100824-4, 24-100824-5

Test	Result	Unit Method Reference		
oly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water				
Perfluoroalkylsulfonic acids				
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	

est	Result	Unit	Method Reference
L-PFHxS (1)	<0.0010		AsureQuality Method (LC-MS/MS)
	<0.0010	μg/L 	
Total PFHxS (3)		μg/L 	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L 	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0050	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids		13	
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols		μg/L	
NEtFOSE-M	<0.0010	ug/l	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
	40.0010	μg/L	Address and Method (Ed Monno)
Telomere Sulfonic acids 4:2 FTS	40,0040	/!	AcuraQuality Mathed (LC MS/MS)
	<0.0010	μg/L 	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

est	Result	Unit	Method Reference
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	97	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	88	%	AsureQuality Method (LC-MS/MS)
M8PFOS	93	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	101	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	96	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	95	%	AsureQuality Method (LC-MS/MS)
M9PFNA	93	%	AsureQuality Method (LC-MS/MS)
M6PFDA	105	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	91	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	98	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	89	%	AsureQuality Method (LC-MS/MS)
MPFOSA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	117	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	117	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	124	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	111	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	133	%	AsureQuality Method (LC-MS/MS)

## **Analysis Summary**

Wellington Laborator	rγ	ν
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Analysis	Method	Accreditation	Authorised by
Poly- and Perfluorinated Alkyl Substance	es (PFAS) in Potable Water		
DX-PFCS01, 03-SUITE_B	AsureQuality Method (LC-MS/MS)	IANZ	Christopher Sampson

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

 $\hbox{L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)}$ 

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9CI-PF3ONS (F-53B major) and 11CI-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Analysis Method Accreditation Authorised by

Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level

DX-PFCS01, 05-HIGHLEVEL AsureQuality Method (LC-MS/MS) IANZ Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9CI-PF3ONS (F-53B major) and 11CI-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

Amelie Sellier Scientist Christopher Sampson Scientist

#### Accreditation

Report Number: 3728334





## **Appendix**

## **Analyte LOR Summary**

#### Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte LOR

Listing applies to samples: 24-100824-3, 24-100824-4, 24-100824-5

#### Perfluoroalkylsulfonic acids

PFPrS 0.0010 µg/L PFBS 0.0010 µg/L PFPeS  $0.0010 \mu g/L$ di-PFHxS (1) 0.0010 µg/L mono-PFHxS (1) 0.0010 µg/L L-PFHxS (1) 0.0010 μg/L Total PFHxS (3) 0.0010 µg/L PFHpS 0.0010 µg/L di-PFOS (5) 0.0010 µg/L mono-PFOS (5) 0.0010 µg/L L-PFOS (5) 0.0010 μg/L Total PFOS (7) 0.0010 µg/L Sum PFHxS+PFOS (1) 0.0010 µg/L **PFNS**  $0.0010 \mu g/L$ PFDS 0.0010 µg/L **PFECHS** 0.0010 µg/L

#### Perfluoroalkylcarboxylic acids

PFBA 0.0010 µg/L PFPeA 0.0010 µg/L PFHxA  $0.0010 \mu g/L$ 0.0010 μg/L PFHpA PFOA 0.0010 µg/L PFNA 0.0010 µg/L PFDA 0.0010 µg/L PFUnDA 0.0010 µg/L PFDoDA 0.0010 µg/L PFTrDA 0.0010 µg/L PFTeDA 0.0010 μg/L P37DMOA  $0.0010 \mu g/L$ 

#### Perfluorooctanesulfonamides

 PFOSA
 0.0010 μg/L

 NEtFOSA-M
 0.0010 μg/L

 NMeFOSA-M
 0.0010 μg/L

#### Perfluorooctanesulfonamidoacetic acids

 NEtFOSAA
 0.0010 μg/L

 NMeFOSAA
 0.0010 μg/L

#### Perfluorooctanesulfonamidoethanols

NEtFOSE-M 0.0010  $\mu$ g/L NMeFOSE-M 0.0010  $\mu$ g/L

#### Telomere Sulfonic acids

 4:2 FTS
 0.0010 μg/L

 6:2 FTS
 0.0010 μg/L

 8:2 FTS
 0.0010 μg/L

 10:2 FTS
 0.0010 μg/L

## Telomere Carboxylic acids

FPrPA (3:3FTA) 0.0010 μg/L

FPePA (5:3FTA)	0.0010 μg/L
FHpPA (7:3FTA)	0.0010 μg/L
Miscellaneous	
F-53B (major)	0.0010 μg/L
F-53B (minor)	0.0010 μg/L
Sum F-53B	0.0010 μg/L
ADONA	0.0010 μg/L
HFPO-DA (GenX)	0.0010 μg/L

## Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level - AsureQuality Method (LC-MS/MS)

Analyte LOR

Listing applies to samples: 24-100824-1, 24-100824-2

# Perfluoroalkylsulfonic acids

PFPrS 0.025 µg/L PFBS 0.025 µg/L **PFPeS** 0.025 µg/L di-PFHxS (1) 0.025 µg/L mono-PFHxS (1) 0.025 µg/L L-PFHxS (1) 0.025 µg/L Total PFHxS (3) 0.025 µg/L PFHpS 0.025 μg/L 0.025 μg/L di-PFOS (5) mono-PFOS (5) 0.025 µg/L L-PFOS (5) 0.025 µg/L Total PFOS (7)  $0.025~\mu g/L$ Sum PFHxS+PFOS (1) 0.025 µg/L PFNS 0.050 µg/L 0.10 μg/L PFDS **PFECHS** 0.025 µg/L

## Perfluoroalkylcarboxylic acids

PFBA  $0.10 \, \mu g/L$ PFPeA 0.10 μg/L PFHxA 0.025 µg/L PFHpA 0.025 μg/L PFOA 0.025 µg/L PFNA  $0.025~\mu g/L$ PFDA 0.025 µg/L PFUnDA 0.025 µg/L PFDoDA 0.10 µg/L PFTrDA  $0.10 \, \mu g/L$ PFTeDA 0.10 µg/L P37DMOA  $0.050~\mu g/L$ 

## Perfluorooctanesulfonamides

PFOSA 0.025  $\mu$ g/L NEtFOSA-M 0.10  $\mu$ g/L NMeFOSA-M 0.10  $\mu$ g/L

#### Perfluorooctanesulfonamidoacetic acids

NEtFOSAA 0.025  $\mu$ g/L NMeFOSAA 0.025  $\mu$ g/L

#### Perfluorooctanesulfonamidoethanols

 NEtFOSE-M
 0.10 μg/L

 NMeFOSE-M
 0.10 μg/L

Telomere Sulfonic acids

 4:2 FTS
 0.025 μg/L

 6:2 FTS
 0.050 μg/L

 8:2 FTS
 0.10 μg/L

 10:2 FTS
 0.025 μg/L

Telomere Carboxylic acids

 FPrPA (3:3FTA)
 0.10 μg/L

 FPePA (5:3FTA)
 0.025 μg/L

 FHpPA (7:3FTA)
 0.025 μg/L

Miscellaneous

F-53B (major) 0.10 µg/L
F-53B (minor) 0.050 µg/L
Sum F-53B 0.1 µg/L
ADONA 0.025 µg/L
HFPO-DA (GenX) 0.050 µg/L

#### **Analyte Definitions**

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte Full Name

Listing applies to samples: 24-100824-3, 24-100824-4, 24-100824-5

Perfluoroalkylsulfonic acids

PFPrS Perfluoro-1-propanesulfonic acid
PFBS Perfluoro-1-butanesulfonic acid
PFPeS Perfluoro-1-pentanesulfonic acid

 di-PFHxS (1)
 Total Perfluorodimethylbutane sulfonic acids

 mono-PFHxS (1)
 Total Perfluoromethylpentane sulfonic acids

 L-PFHxS (1)
 Linear Perfluorohexanesulfonic acid

 PFHpS
 Perfluoro-1-heptanesulfonic acid

 di-PFOS (5)
 Total Perfluorodimethylhexane sulfonic acids

 mono-PFOS (5)
 Total Perfluoromethylheptane sulfonic acids

 L-PFOS (5)
 Linear Perfluorooctanesulfonic acid

 PFNS
 Perfluoro-1-nonanesulfonic acid

PFECHS Perfluoro-4-ethylcyclohexanesulfonic acid

Perfluoro-1-decanesulfonic acid

Perfluoroalkylcarboxylic acids

**PFDS** 

PFBA Perfluoro-n-butanoic acid PFPeA Perfluoro-n-pentanoic acid PFHxA Perfluoro-n-hexanoic acid PFHpA Perfluoro-n-heptanoic acid PFOA Perfluoro-n-octanoic acid PFNA Perfluoro-n-nonanoic acid PFDA Perfluoro-n-decanoic acid PFUnDA Perfluoro-n-undecanoic acid PFDoDA Perfluoro-n-dodecanoic acid PFTrDA Perfluoro-n-tridecanoic acid PFTeDA Perfluoro-n-tetradecanoic acid P37DMOA Perfluoro-3,7-dimethyloctanoic acid

Perfluorooctanesulfonamides

PFOSA Perfluoro-1-octanesulfonamide

NEtFOSA-M N-ethylperfluoro-1-octanesulfonamide

NMeFOSA-M N-methylperfluoro-1-octanesulfonamide

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA N-methylperfluoro-1-octanesulfonamidoacetic acid

Perfluorooctanesulfonamidoethanols

Report Number: 3728334

Analyte Full Name

NEtFOSE-M 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

Telomere Sulfonic acids

4:2 FTS 1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS 1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS 1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS 1H,1H,2H,2H-perfluorododecanesulfonic acid

Telomere Carboxylic acids

FPrPA (3:3FTA)

3-Perfluoropropyl propanoic acid
FPePA (5:3FTA)

3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)

3-Perfluoroheptyl propanoic acid

Miscellaneous

ADONA

F-53B (major)

9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)

11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B

Sum of F-53B components (major + minor)

Dodecafluoro-3H-4.8-dioxanonanoic acid

HFPO-DA (GenX)

Tetrafluoro-2-(heptafluoropropoxy)propanoic acid

Internal Standards

M3PFBS
Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS
Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS
Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA
Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA
Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA
Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHpA
Perfluoro-n-[-1,2,3,4-13C4]heptanoic acid

M8PFOA Perfluoro-n-[13C8]octanoic acid
M9PFNA Perfluoro-n-[13C9]nonanoic acid

M6PFDA Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSA N-ethyl-D5-perfluoro-1-octanesulfonamide

DNEtFOSAA
N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid

DNMeFOSAA
N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid

DNEtFOSE
2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol

DNMeFOSE
2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol

M4:2FTS
1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid

M6:2FTS
1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid

M8:2FTS
1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid

M3HFPO-DA
Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid

Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level - AsureQuality Method (LC-MS/MS)

Analyte Full Name

Listing applies to samples: 24-100824-1, 24-100824-2

Perfluoroalkylsulfonic acids

PFPrS Perfluoro-1-propanesulfonic acid
PFBS Perfluoro-1-butanesulfonic acid
PFPeS Perfluoro-1-pentanesulfonic acid

di-PFHxS (1)
Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)
Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)
Linear Perfluorohexanesulfonic acid
PFHpS
Perfluoro-1-heptanesulfonic acid

di-PFOS (5)

Total Perfluorodimethylhexane sulfonic acids

Analyte Full Name

mono-PFOS (5)

Total Perfluoromethylheptane sulfonic acids

L-PFOS (5)

Linear Perfluorooctanesulfonic acid

PFNS

Perfluoro-1-nonanesulfonic acid

PFDS

Perfluoro-1-decanesulfonic acid

PFECHS Perfluoro-4-ethylcyclohexanesulfonic acid

Perfluoroalkylcarboxylic acids

PFBA Perfluoro-n-butanoic acid PFPeA Perfluoro-n-pentanoic acid PFHxA Perfluoro-n-hexanoic acid PFHpA Perfluoro-n-heptanoic acid PFOA Perfluoro-n-octanoic acid PFNA Perfluoro-n-nonanoic acid PFDA Perfluoro-n-decanoic acid PFUnDA Perfluoro-n-undecanoic acid PFDoDA Perfluoro-n-dodecanoic acid PFTrDA Perfluoro-n-tridecanoic acid PFTeDA Perfluoro-n-tetradecanoic acid P37DMOA Perfluoro-3,7-dimethyloctanoic acid

Perfluorooctanesulfonamides

PFOSA Perfluoro-1-octanesulfonamide

NEtFOSA-M N-ethylperfluoro-1-octanesulfonamide

NMeFOSA-M N-methylperfluoro-1-octanesulfonamide

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA N-methylperfluoro-1-octanesulfonamidoacetic acid

Perfluorooctanesulfonamidoethanols

NEtFOSE-M 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol
NMeFOSE-M 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

Telomere Sulfonic acids

4:2 FTS1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid6:2 FTS1H,1H,2H,2H-perfluoro-1-octanesulfonic acid8:2 FTS1H,1H,2H,2H-perfluoro-1-decanesulfonic acid10:2 FTS1H,1H,2H,2H-perfluorododecanesulfonic acid

Telomere Carboxylic acids

FPrPA (3:3FTA)

3-Perfluoropropyl propanoic acid
FPePA (5:3FTA)

3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)

3-Perfluoropeptyl propanoic acid

Miscellaneous

F-53B (major)

9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)

11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid

Sum F-53B Sum of F-53B components (major + minor)

ADONA Dodecafluoro-3H-4,8-dioxanonanoic acid

HFPO-DA (GenX) Tetrafluoro-2-(heptafluoropropoxy)propanoic acid

Internal Standards

M3PFBS Perfluoro-1-[2,3,4-13C3]butanesulfonic acid M3PFHxS Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid M8PFOS Perfluoro-1-[13C8]octanesulfonic acid M4PFBA Perfluoro-n-[1,2,3,4-13C4]butanoic acid M5PFPeA Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid M5PFHxA Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid MPFHpA Perfluoro-n-[-1,2,3,4-13C4]heptanoic acid M8PFOA Perfluoro-n-[13C8]octanoic acid

M9PFNA Perfluoro-n-[13C9]nonanoic acid
M6PFDA Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid

M6PFDA Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid

Analyte	Full Name		
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid		
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid		
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide		
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide		
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide		
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid		
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid		
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol		
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol		
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid		
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid		
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid		
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid		
LOR = Limit of Reporting	LOD = Limit of Detection NR = Not Reportable		



# Certificate of Analysis

Submission Reference: A02744124

**Final Report** 

Nerena Rhodes **Pattle Delamore Partners Limited** P O Box 9528 Auckland 1149 **New Zealand** 

PO Number: OHA\_PFAS

Report Issued: 24-Apr-2024 AsureQuality Reference: 24-100834 Sample(s) Received: 10-Apr-2024 08:30

Testing Period: 10-Apr-2024 to 24-Apr-2024 Date of analysis is available on request.

## Results

Report Number: 3728341

The tests were performed on the samples as received.

Customer Sample Name: OHA_MW6_09042	24		<b>Lab ID:</b> 24-100834-1
Sample Condition: Acceptable	Sampled Date: 09-Apr-2024		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (F	PFAS) in Non Potable Water - High Level		
Perfluoroalkylsulfonic acids			
PFPrS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.075	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.095	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.22	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	1.5	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	1.7	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.066	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.056	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.88	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	1.8	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	2.7	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	4.4	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.32	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	1.0	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.64	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.27	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.27	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.21	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report: https://www.asurequality.com/about/terms-of-business/

**DNMeFOSE** 

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AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	107	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	106	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	110	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	86	%	AsureQuality Method (LC-MS/MS)

# **QC** Results

## Blank

Relates to sample(s) 24-100834-1

est	Result	Unit	Method Reference
ly- and Perfluorinated Alkyl Substances (PFAS) in Non	Potable Water - High Level		
Perfluoroalkylsulfonic acids			
PFPrS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids		· · · · · · · · · · · · · · · · · · ·	
NEtFOSAA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)

<u> </u>			
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	111	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	102	%	AsureQuality Method (LC-MS/MS)
M8PFOS	105	%	AsureQuality Method (LC-MS/MS)
M4PFBA	109	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	109	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	111	%	AsureQuality Method (LC-MS/MS)
MPFHpA	108	%	AsureQuality Method (LC-MS/MS)
M8PFOA	111	%	AsureQuality Method (LC-MS/MS)
M9PFNA	108	%	AsureQuality Method (LC-MS/MS)
M6PFDA	102	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	110	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	103	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	99	%	AsureQuality Method (LC-MS/MS)
MPFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	101	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	118	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	87	%	AsureQuality Method (LC-MS/MS)
		70	- ' - '

#### **Analysis Summary**

## **Wellington Laboratory**

Analysis Method Accreditation Authorised by

Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level

DX-PFCS01, 05-HIGHLEVEL AsureQuality Method (LC-MS/MS) IANZ Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9CI-PF3ONS (F-53B major) and 11CI-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.



Amelie Sellier Scientist

#### **Accreditation**





# **Appendix**

# **Analyte LOR Summary**

MS)
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Analyte	LOR
Perfluoroalkylsulfonic acids	LON
PFPrS	0.025 μg/L
PFBS	0.025 μg/L
PFPeS	0.025 μg/L
di-PFHxS (1)	0.025 μg/L
mono-PFHxS (1)	0.025 μg/L
L-PFHxS (1)	0.025 μg/L
Total PFHxS (3)	0.025 μg/L
PFHpS	0.025 μg/L
di-PFOS (5)	0.025 μg/L
mono-PFOS (5)	0.025 μg/L
L-PFOS (5)	0.025 μg/L
Total PFOS (7)	0.025 μg/L
Sum PFHxS+PFOS (1)	0.025 μg/L
PFNS	0.050 μg/L
PFDS	0.10 µg/L
PFECHS	0.025 μg/L
Perfluoroalkylcarboxylic acids	0.020 pg/2
PFBA	0.10 μg/L
PFPeA	0.10 μg/L
PFHxA	0.025 μg/L
PFHpA	0.025 μg/L
PFOA	0.025 μg/L
PFNA	0.025 μg/L
PFDA	0.025 μg/L
PFUnDA	0.025 μg/L
PFDoDA	0.10 µg/L
PFTrDA	0.10 µg/L
PFTeDA	0.10 µg/L
P37DMOA	0.050 μg/L
Perfluorooctanesulfonamides	
PFOSA	0.025 μg/L
NEtFOSA-M	0.10 µg/L
NMeFOSA-M	0.10 μg/L
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.025 μg/L
NMeFOSAA	0.025 μg/L
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	0.10 μg/L
NMeFOSE-M	0.10 μg/L
Telomere Sulfonic acids	
4:2 FTS	0.025 μg/L
6:2 FTS	0.050 μg/L
8:2 FTS	0.10 μg/L
10:2 FTS	0.025 µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.10 μg/L
FPePA (5:3FTA)	0.025 μg/L
<b>-</b>	

FHpPA (7:3FTA)	0.025 μg/L
Miscellaneous	
F-53B (major)	0.10 μg/L
F-53B (minor)	0.050 μg/L
Sum F-53B	0.1 μg/L
ADONA	0.025 μg/L
HFPO-DA (GenX)	0.050 μg/L

## **Analyte Definitions**

#### Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level - AsureQuality Method (LC-MS/MS)

Analyte Full Name

Perfluoroalkylsulfonic acids

PFPS Perfluoro-1-propanesulfonic acid
PFBS Perfluoro-1-butanesulfonic acid
PFPeS Perfluoro-1-pentanesulfonic acid

di-PFHxS (1)

Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)

Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)

Linear Perfluorohexanesulfonic acid

PFHpS

Perfluoro-1-heptanesulfonic acid

di-PFOS (5)

Total Perfluorodimethylhexane sulfonic acids mono-PFOS (5)

Total Perfluoromethylheptane sulfonic acids L-PFOS (5)

Linear Perfluoroctanesulfonic acid

PFNS

Perfluoro-1-nonanesulfonic acid

PFDS

Perfluoro-1-decanesulfonic acid

PFECHS Perfluoro-4-ethylcyclohexanesulfonic acid

Perfluoroalkylcarboxylic acids

PFBA Perfluoro-n-butanoic acid PFPeA Perfluoro-n-pentanoic acid PFHxA Perfluoro-n-hexanoic acid PFHpA Perfluoro-n-heptanoic acid PFOA Perfluoro-n-octanoic acid PFNA Perfluoro-n-nonanoic acid PFDA Perfluoro-n-decanoic acid PFUnDA Perfluoro-n-undecanoic acid PFDoDA Perfluoro-n-dodecanoic acid PFTrDA Perfluoro-n-tridecanoic acid PFTeDA Perfluoro-n-tetradecanoic acid P37DMOA Perfluoro-3,7-dimethyloctanoic acid

Perfluorooctanesulfonamides

PFOSA Perfluoro-1-octanesulfonamide

NEtFOSA-M N-ethylperfluoro-1-octanesulfonamide

NMeFOSA-M N-methylperfluoro-1-octanesulfonamide

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA N-methylperfluoro-1-octanesulfonamidoacetic acid

Perfluorooctanesulfonamidoethanols

 NEtFOSE-M
 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol

 NMeFOSE-M
 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

Telomere Sulfonic acids

4:2 FTS 1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS 1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS 1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS 1H,1H,2H,2H-perfluorododecanesulfonic acid

Telomere Carboxylic acids

FPrPA (3:3FTA) 3-Perfluoropropyl propanoic acid

AsureQuality Reference: 24	1-100834	Report Issued: 24-Apr-2024
Analyte	Full Name	
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid	
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid	
Miscellaneous		
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	
F-53B (minor)	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	
Sum F-53B	Sum of F-53B components (major + minor)	
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid	
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid	
Internal Standards		
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid	
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid	
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid	
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid	
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid	
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid	
MPFHpA	Perfluoro-n-[-1,2,3,4-13C4]heptanoic acid	
M8PFOA	Perfluoro-n-[13C8]octanoic acid	
M9PFNA	Perfluoro-n-[13C9]nonanoic acid	
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid	
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid	
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid	
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid	
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide	
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide	
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide	
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid	
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid	
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol	
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol	
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid	
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid	
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid	
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid	

NR = Not Reportable

LOD = Limit of Detection

LOR = Limit of Reporting



# Certificate of Analysis

AsureQuality Reference: 24-100846

**Submission Reference: A02744124** 

**Final Report** 

PO Number: OHA PFAS

Nerena Rhodes
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

Sample(s) Received: 10-Apr-2024 08:30

Testing Period: 10-Apr-2024 to 24-Apr-2024
Date of analysis is available on request.

Report Issued: 24-Apr-2024

Report Number: 3728346

#### Results

The tests were performed on the samples as received.

Customer Sample Name: OHA\_MW9\_090424 Lab ID: 24-100846-1 Sample Condition: Acceptable Sampled Date: 09-Apr-2024 Method Reference Test Result Unit Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level Perfluoroalkylsulfonic acids **PFPrS** <0.025 AsureQuality Method (LC-MS/MS) µg/L **PFBS** 0.035 AsureQuality Method (LC-MS/MS) μg/L **PFPeS** 0.044 μg/L AsureQuality Method (LC-MS/MS) di-PFHxS (1) < 0.025 μg/L AsureQuality Method (LC-MS/MS) mono-PFHxS (1) 0.087 AsureQuality Method (LC-MS/MS) µg/L L-PFHxS (1) 0.63 µg/L AsureQuality Method (LC-MS/MS) Total PFHxS (3) 0.72 μg/L AsureQuality Method (LC-MS/MS) PFHpS 0.034 AsureQuality Method (LC-MS/MS) µg/L di-PFOS (5) 0.034 µg/L AsureQuality Method (LC-MS/MS) mono-PFOS (5) 0.36 AsureQuality Method (LC-MS/MS) μg/L L-PFOS (5) 0.32 μg/L AsureQuality Method (LC-MS/MS) Total PFOS (7) 0.71 μg/L AsureQuality Method (LC-MS/MS) Sum PFHxS+PFOS (1) 1.4 μg/L AsureQuality Method (LC-MS/MS) PFNS < 0.050 AsureQuality Method (LC-MS/MS) μg/L PFDS AsureQuality Method (LC-MS/MS) < 0.10 μg/L <0.025 AsureQuality Method (LC-MS/MS) **PFECHS** μg/L Perfluoroalkylcarboxylic acids 0.45 AsureQuality Method (LC-MS/MS) PFBA µg/L **PFPeA** 1.5 μg/L AsureQuality Method (LC-MS/MS) PFHxA 0.80 AsureQuality Method (LC-MS/MS) μg/L PFHpA 0.39 μg/L AsureQuality Method (LC-MS/MS) **PFOA** 0.33 μg/L AsureQuality Method (LC-MS/MS) PFNA 0.19 μg/L AsureQuality Method (LC-MS/MS) PFDA < 0.025 AsureQuality Method (LC-MS/MS) μg/L PFUnDA < 0.025 AsureQuality Method (LC-MS/MS) µg/L

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report: https://www.asurequality.com/about/terms-of-business/

**DNMeFOSE** 

AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	98	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	105	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	85	%	AsureQuality Method (LC-MS/MS)

## **QC Results**

#### Blank

Relates to sample(s) 24-100846-1

est	Result	Unit	Method Reference
oly- and Perfluorinated Alkyl Substances (PFAS) in Non	Potable Water - High Level		
Perfluoroalkylsulfonic acids			
PFPrS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids		·	
NEtFOSAA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
		· · · · · · · · · · · · · · · · · · ·	

Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.10	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.025	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.050	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	111	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	102	%	AsureQuality Method (LC-MS/MS)
M8PFOS	105	%	AsureQuality Method (LC-MS/MS)
M4PFBA	109	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	109	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	111	%	AsureQuality Method (LC-MS/MS)
MPFHpA	108	%	AsureQuality Method (LC-MS/MS)
M8PFOA	111	%	AsureQuality Method (LC-MS/MS)
M9PFNA	108	%	AsureQuality Method (LC-MS/MS)
M6PFDA	102	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	110	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	103	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	99	%	AsureQuality Method (LC-MS/MS)
MPFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	101	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	118	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	87	%	AsureQuality Method (LC-MS/MS)

#### **Analysis Summary**

### **Wellington Laboratory**

Analysis Method Accreditation Authorised by

Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level

DX-PFCS01, 05-HIGHLEVEL AsureQuality Method (LC-MS/MS) IANZ Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9CI-PF3ONS (F-53B major) and 11CI-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.



Amelie Sellier Scientist

## **Accreditation**





# **Appendix**

# **Analyte LOR Summary**

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	b) III Non Polable Water - High Level - AsureQuality Method (LC-M3/M3)
Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.025 μg/L
PFBS	0.025 μg/L
PFPeS	0.025 μg/L
di-PFHxS (1)	0.025 μg/L
mono-PFHxS (1)	0.025 μg/L
L-PFHxS (1)	0.025 μg/L
Total PFHxS (3)	0.025 μg/L
PFHpS	0.025 μg/L
di-PFOS (5)	0.025 μg/L
mono-PFOS (5)	0.025 μg/L
L-PFOS (5)	0.025 μg/L
Total PFOS (7)	0.025 μg/L
Sum PFHxS+PFOS (1)	0.025 μg/L
PFNS	0.050 μg/L
PFDS	0.10 μg/L
PFECHS	0.025 μg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.10 μg/L
PFPeA	0.10 μg/L
PFHxA	0.025 μg/L
PFHpA	0.025 μg/L
PFOA	0.025 μg/L
PFNA	0.025 μg/L
PFDA	0.025 μg/L
PFUnDA	0.025 μg/L
PFDoDA	0.10 μg/L
PFTrDA	0.10 μg/L
PFTeDA	0.10 μg/L
P37DMOA	0.050 μg/L
Perfluorooctanesulfonamides	
PFOSA	0.025 μg/L
NEtFOSA-M	0.10 μg/L
NMeFOSA-M	0.10 μg/L
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.025 μg/L
NMeFOSAA	0.025 μg/L
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	0.10 μg/L
NMeFOSE-M	0.10 μg/L
Telomere Sulfonic acids	
4:2 FTS	0.025 μg/L
6:2 FTS	0.050 μg/L
8:2 FTS	0.10 μg/L
10:2 FTS	0.025 μg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.10 μg/L
FPePA (5:3FTA)	0.025 μg/L
Panart Number: 3728346 This report must not	he reproduced except in full, without the prior written approval of the laborator

FHpPA (7:3FTA)	0.025 µg/L
Miscellaneous	
F-53B (major)	0.10 μg/L
F-53B (minor)	0.050 μg/L
Sum F-53B	0.1 μg/L
ADONA	0.025 μg/L
HFPO-DA (GenX)	0.050 μg/L

## **Analyte Definitions**

#### Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level - AsureQuality Method (LC-MS/MS)

Analyte **Full Name** 

Perfluoroalkylsulfonic acids

**PFPrS** Perfluoro-1-propanesulfonic acid **PFBS** Perfluoro-1-butanesulfonic acid PFPeS Perfluoro-1-pentanesulfonic acid

di-PFHxS (1) Total Perfluorodimethylbutane sulfonic acids mono-PFHxS (1) Total Perfluoromethylpentane sulfonic acids L-PFHxS (1) Linear Perfluorohexanesulfonic acid PFHpS Perfluoro-1-heptanesulfonic acid

Total Perfluorodimethylhexane sulfonic acids mono-PFOS (5) Total Perfluoromethylheptane sulfonic acids L-PFOS (5) Linear Perfluorooctanesulfonic acid PFNS Perfluoro-1-nonanesulfonic acid **PFDS** Perfluoro-1-decanesulfonic acid

**PFECHS** Perfluoro-4-ethylcyclohexanesulfonic acid

Perfluoroalkylcarboxylic acids

di-PFOS (5)

PFBA Perfluoro-n-butanoic acid PFPeA Perfluoro-n-pentanoic acid PFHxA Perfluoro-n-hexanoic acid PFHpA Perfluoro-n-heptanoic acid PFOA Perfluoro-n-octanoic acid PFNA Perfluoro-n-nonanoic acid PFDA Perfluoro-n-decanoic acid PFUnDA Perfluoro-n-undecanoic acid PFDoDA Perfluoro-n-dodecanoic acid PFTrDA Perfluoro-n-tridecanoic acid PFTeDA Perfluoro-n-tetradecanoic acid P37DMOA Perfluoro-3,7-dimethyloctanoic acid

Perfluorooctanesulfonamides

PFOSA Perfluoro-1-octanesulfonamide NEtFOSA-M N-ethylperfluoro-1-octanesulfonamide NMeFOSA-M N-methylperfluoro-1-octanesulfonamide

Perfluorooctanesulfonamidoacetic acids

**NEtFOSAA** N-ethylperfluoro-1-octanesulfonamidoacetic acid NMeFOSAA N-methylperfluoro-1-octanesulfonamidoacetic acid

Perfluorooctanesulfonamidoethanols

NEtFOSE-M 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol NMeFOSE-M 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

Telomere Sulfonic acids

4:2 FTS 1H.1H.2H.2H-perfluoro-1-hexanesulfonic acid 6:2 FTS 1H,1H,2H,2H-perfluoro-1-octanesulfonic acid 8:2 FTS 1H,1H,2H,2H-perfluoro-1-decanesulfonic acid 10:2 FTS 1H,1H,2H,2H-perfluorododecanesulfonic acid

Telomere Carboxylic acids

FPrPA (3:3FTA) 3-Perfluoropropyl propanoic acid

Addicación y Noicionoc. 24-10	00040	
Analyte	Full Name	
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid	
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid	
Miscellaneous		
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	
F-53B (minor)	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	
Sum F-53B	Sum of F-53B components (major + minor)	
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid	
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid	
Internal Standards		
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid	
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid	
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid	
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid	
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid	
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid	
MPFHpA	Perfluoro-n-[-1,2,3,4-13C4]heptanoic acid	
M8PFOA	Perfluoro-n-[13C8]octanoic acid	
M9PFNA	Perfluoro-n-[13C9]nonanoic acid	
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid	
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid	
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid	
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid	
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide	
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide	
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide	
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid	
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid	
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol	
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol	
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid	
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid	
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid	
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid	
LOR = Limit of Reporting	LOD = Limit of Detection NR = Not Reportable	



# Certificate of Analysis

Submission Reference: A02744124

**Final Report** 

**NZDF ESDAT Pattle Delamore Partners Limited** P O Box 9528 Auckland 1149 **New Zealand** 

PO Number: OHA\_PFAS

Report Issued: 09-May-2024 AsureQuality Reference: 24-103822 Sample(s) Received: 12-Apr-2024 08:15

Testing Period: 15-Apr-2024 to 09-May-2024 Date of analysis is available on request.

## Results

Report Number: 3749226

The tests were performed on the samples as received.

Customer Sample Name: OHA_SW4_10042	24		<b>Lab ID:</b> 24-103822-1
Sample Condition: Acceptable	Sampled Date: 10-Apr-2024		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (I	PFAS) in Potable Water		
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.0022	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.0022	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.0029	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.0072	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.012	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	0.0077	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.019	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.023	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.012	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.0063	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.0038	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0029	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report: https://www.asurequality.com/about/terms-of-business/

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	NR	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	NR	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			, , ,
M3PFBS	125	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	101	%	AsureQuality Method (LC-MS/MS)
M8PFOS	109	%	AsureQuality Method (LC-MS/MS)
M4PFBA	90	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	92	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	106	%	AsureQuality Method (LC-MS/MS)
MPFHpA	99	%	AsureQuality Method (LC-MS/MS)
M8PFOA	96	%	AsureQuality Method (LC-MS/MS)
M9PFNA	80	%	
			AsureQuality Method (LC-MS/MS)
M6PFDA	105	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	109	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	209 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	1239 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	80	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	59	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	51	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	101	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	83	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	65	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	66	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	165 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	139	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	87	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	105	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

## **QC Results**

#### **Blank**

Relates to sample(s) 24-103822-1

est	Result	Unit	Method Reference
ly- and Perfluorinated Alkyl Substances (PFAS) in Pota	able Water		
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
РЗ7ДМОА	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	NR	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	NR	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	100	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	100	%	AsureQuality Method (LC-MS/MS)
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	100	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	100	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	100	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	100	%	AsureQuality Method (LC-MS/MS)
MPFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	100	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	100	%	AsureQuality Method (LC-MS/MS)

AsureQuality Reference: 24-103822 Report Issued: 09-May-2024

#### **Analysis Summary**

## **Wellington Laboratory**

Analysis Method Accreditation Authorised by

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water

DX-PFCS01, 03-SUITE\_B AsureQuality Method (LC-MS/MS) IANZ Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9CI-PF3ONS (F-53B major) and 11CI-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

Adia

**Amelie Sellier** 

Scientist

## **Accreditation**





Report Issued: 09-May-2024

# **Appendix**

# **Analyte LOR Summary**

		(DEAGNA DA		
Poly- and Perfluorinated	l Alkvi Substances	(PFAS) in Potable Water -	<ul> <li>AsureQuality Method (LC-MS/MS)</li> </ul>	

Foly- and Ferniuonnated Aikyi Substances (FFAS	) III Polable Water - AsureQuality Metriou (LC-MS
Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 μg/L
PFBS	0.0010 μg/L
PFPeS	0.0010 μg/L
di-PFHxS (1)	0.0010 μg/L
mono-PFHxS (1)	0.0010 μg/L
L-PFHxS (1)	0.0010 μg/L
Total PFHxS (3)	0.0010 μg/L
PFHpS	0.0010 μg/L
di-PFOS (5)	0.0010 μg/L
mono-PFOS (5)	0.0010 μg/L
L-PFOS (5)	0.0010 μg/L
Total PFOS (7)	0.0010 μg/L
Sum PFHxS+PFOS (1)	0.0010 μg/L
PFNS	0.0010 μg/L
PFDS	NR μg/L
PFECHS	0.0010 μg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 μg/L
PFPeA	0.0010 μg/L
PFHxA	0.0010 μg/L
PFHpA	0.0010 μg/L
PFOA	0.0010 μg/L
PFNA	0.0010 μg/L
PFDA	0.0010 μg/L
PFUnDA	0.0010 μg/L
PFDoDA	0.0010 μg/L
PFTrDA	NR μg/L
PFTeDA	NR μg/L
P37DMOA	NR μg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 μg/L
NEtFOSA-M	NR μg/L
NMeFOSA-M	0.0010 μg/L
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 μg/L
NMeFOSAA	0.0010 µg/L
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	0.0010 μg/L
NMeFOSE-M	0.0010 µg/L
Telomere Sulfonic acids	
4:2 FTS	0.0010 μg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	NR μg/L
Telomere Carboxylic acids	. •
FPrPA (3:3FTA)	0.0010 μg/L
FPePA (5:3FTA)	0.0010 µg/L
,	, 5

FHpPA (7:3FTA)	NR μg/L
Miscellaneous	
F-53B (major)	0.0010 μg/L
F-53B (minor)	0.0010 μg/L
Sum F-53B	0.0010 μg/L
ADONA	0.0010 μg/L
HFPO-DA (GenX)	0.0010 μg/L

#### **Analyte Definitions**

#### Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte Full Name

Perfluoroalkylsulfonic acids

PFPS Perfluoro-1-propanesulfonic acid
PFBS Perfluoro-1-butanesulfonic acid
PFPeS Perfluoro-1-pentanesulfonic acid

di-PFHxS (1)
Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)
Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)
Linear Perfluorohexanesulfonic acid
PFHpS
Perfluoro-1-heptanesulfonic acid

di-PFOS (5)

Total Perfluorodimethylhexane sulfonic acids mono-PFOS (5)

Total Perfluoromethylheptane sulfonic acids L-PFOS (5)

Linear Perfluoroctanesulfonic acid

PFNS

Perfluoro-1-nonanesulfonic acid

PFDS

Perfluoro-1-decanesulfonic acid

PFECHS Perfluoro-4-ethylcyclohexanesulfonic acid

Perfluoroalkylcarboxylic acids

PFBA Perfluoro-n-butanoic acid PFPeA Perfluoro-n-pentanoic acid PFHxA Perfluoro-n-hexanoic acid PFHpA Perfluoro-n-heptanoic acid PFOA Perfluoro-n-octanoic acid PFNA Perfluoro-n-nonanoic acid PFDA Perfluoro-n-decanoic acid PFUnDA Perfluoro-n-undecanoic acid PFDoDA Perfluoro-n-dodecanoic acid PFTrDA Perfluoro-n-tridecanoic acid PFTeDA Perfluoro-n-tetradecanoic acid P37DMOA Perfluoro-3,7-dimethyloctanoic acid

Perfluorooctanesulfonamides

PFOSA Perfluoro-1-octanesulfonamide

NEtFOSA-M N-ethylperfluoro-1-octanesulfonamide

NMeFOSA-M N-methylperfluoro-1-octanesulfonamide

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA N-methylperfluoro-1-octanesulfonamidoacetic acid

Perfluorooctanesulfonamidoethanols

 NEtFOSE-M
 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol

 NMeFOSE-M
 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

Telomere Sulfonic acids

4:2 FTS1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid6:2 FTS1H,1H,2H,2H-perfluoro-1-octanesulfonic acid8:2 FTS1H,1H,2H,2H-perfluoro-1-decanesulfonic acid10:2 FTS1H,1H,2H,2H-perfluorododecanesulfonic acid

Telomere Carboxylic acids

FPrPA (3:3FTA) 3-Perfluoropropyl propanoic acid

AsureQuality Reference: 24-1	103822	Report Issued: 09-May-2024
Analyte	Full Name	
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid	
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid	
Miscellaneous		
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	
F-53B (minor)	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	
Sum F-53B	Sum of F-53B components (major + minor)	
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid	
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid	
Internal Standards		
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid	
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid	
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid	
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid	
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid	
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid	
MPFHpA	Perfluoro-n-[-1,2,3,4-13C4]heptanoic acid	
M8PFOA	Perfluoro-n-[13C8]octanoic acid	
M9PFNA	Perfluoro-n-[13C9]nonanoic acid	
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid	
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid	
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid	
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid	
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide	
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide	
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide	
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid	
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid	
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol	
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol	
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid	
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid	
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid	
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid	
LOR = Limit of Reporting	LOD = Limit of Detection NR = Not Reports	able



# Certificate of Analysis

**Submission Reference: A02744125** 

**Final Report** 

Nerena Rhodes **Pattle Delamore Partners Limited** P O Box 9528 Auckland 1149 **New Zealand** 

PO Number: OHA\_PFAS

Report Issued: 23-Apr-2024 AsureQuality Reference: 24-100840 Sample(s) Received: 10-Apr-2024 08:30

Testing Period: 10-Apr-2024 to 23-Apr-2024 Date of analysis is available on request.

## Results

Report Number: 3727003

The tests were performed on the samples as received.

Customer Sample Name: OHA_SW33_090424			<b>Lab ID:</b> 24-100840-1
Sample Condition: Acceptable	Sampled Date: 09-Apr-2024		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFA	S) in Potable Water		
Perfluoroalkylsulfonic acids			
PFPrS	0.0034	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0085	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.0093	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.013	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.075	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.088	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0029	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0033	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.057	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.078	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.14	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.23	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0050	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.056	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.23	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.15	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.070	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.030	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.024	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report: https://www.asurequality.com/about/terms-of-business/

DNMeFOSE

76

AsureQuality Method (LC-MS/MS)

Report Issued: 23-Apr-2024

Test	Result	Unit	Method Reference
M4:2FTS	193 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	138	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	113	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	106	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

# **QC** Results

R	lan	Ŀ

Relates to sample(s) 24-100840-1

est	Result	Unit	Method Reference
ly- and Perfluorinated Alkyl Substances (PFAS) in Pota	able Water		
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0050	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0050	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

M8:2FTS

M3HFPO-DA

102

133

%

%

AsureQuality Method (LC-MS/MS)

AsureQuality Method (LC-MS/MS)

AsureQuality Reference: 24-100840 Report Issued: 23-Apr-2024

#### **Analysis Summary**

## **Wellington Laboratory**

Analysis Method Accreditation Authorised by

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water

DX-PFCS01, 03-SUITE\_B AsureQuality Method (LC-MS/MS) IANZ Christopher Sampson

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9CI-PF3ONS (F-53B major) and 11CI-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

Christopher Sampson

# Accreditation

Scientist





# **Appendix**

## **Analyte LOR Summary**

## Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 μg/L
PFBS	0.0010 μg/L
PFPeS	0.0010 μg/L
di-PFHxS (1)	0.0010 μg/L
mono-PFHxS (1)	0.0010 μg/L
L-PFHxS (1)	0.0010 μg/L
Total PFHxS (3)	0.0010 μg/L
PFHpS	0.0010 μg/L
di-PFOS (5)	0.0010 μg/L
mono-PFOS (5)	0.0010 μg/L
L-PFOS (5)	0.0010 μg/L
Total PFOS (7)	0.0010 μg/L
Sum PFHxS+PFOS (1)	0.0010 μg/L
PFNS	0.0010 μg/L
PFDS	0.0010 μg/L
PFECHS	0.0010 μg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 μg/L
PFPeA	0.0010 μg/L
PFHxA	0.0010 μg/L
PFHpA	0.0010 μg/L
PFOA	0.0010 μg/L
PFNA	0.0010 μg/L
PFDA	0.0010 μg/L
PFUnDA	0.0010 μg/L
PFDoDA	0.0010 μg/L
PFTrDA	0.0010 μg/L
PFTeDA	0.0010 μg/L
P37DMOA	0.0010 μg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 μg/L
NEtFOSA-M	0.0010 μg/L
NMeFOSA-M	0.0010 μg/L
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 μg/L
NMeFOSAA	0.0010 μg/L
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	0.0010 μg/L
NMeFOSE-M	0.0010 μg/L
Telomere Sulfonic acids	
4:2 FTS	0.0010 μg/L
6:2 FTS	0.0010 μg/L
8:2 FTS	0.0010 μg/L
10:2 FTS	0.0010 μg/L
Telomere Carboxylic acids	0.0040
FPrPA (3:3FTA)	0.0010 μg/L
FPePA (5:3FTA)	0.0010 μg/L

FHpPA (7:3FTA)	0.0010 μg/L
Miscellaneous	
F-53B (major)	0.0010 μg/L
F-53B (minor)	0.0010 μg/L
Sum F-53B	0.0010 μg/L
ADONA	0.0010 μg/L
HFPO-DA (GenX)	0.0010 μg/L

#### **Analyte Definitions**

#### Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte Full Name

Perfluoroalkylsulfonic acids

PFPS Perfluoro-1-propanesulfonic acid
PFBS Perfluoro-1-butanesulfonic acid
PFPeS Perfluoro-1-pentanesulfonic acid

 di-PFHxS (1)
 Total Perfluorodimethylbutane sulfonic acids

 mono-PFHxS (1)
 Total Perfluoromethylpentane sulfonic acids

 L-PFHxS (1)
 Linear Perfluorohexanesulfonic acid

 PFHpS
 Perfluoro-1-heptanesulfonic acid

di-PFOS (5)

Total Perfluorodimethylhexane sulfonic acids mono-PFOS (5)

Total Perfluoromethylheptane sulfonic acids L-PFOS (5)

Linear Perfluoroctanesulfonic acid

PFNS

Perfluoro-1-nonanesulfonic acid

PFDS

Perfluoro-1-decanesulfonic acid

PFECHS Perfluoro-4-ethylcyclohexanesulfonic acid

Perfluoroalkylcarboxylic acids

PFBA Perfluoro-n-butanoic acid PFPeA Perfluoro-n-pentanoic acid PFHxA Perfluoro-n-hexanoic acid PFHpA Perfluoro-n-heptanoic acid PFOA Perfluoro-n-octanoic acid PFNA Perfluoro-n-nonanoic acid PFDA Perfluoro-n-decanoic acid PFUnDA Perfluoro-n-undecanoic acid PFDoDA Perfluoro-n-dodecanoic acid PFTrDA Perfluoro-n-tridecanoic acid PFTeDA Perfluoro-n-tetradecanoic acid P37DMOA Perfluoro-3,7-dimethyloctanoic acid

Perfluorooctanesulfonamides

PFOSA Perfluoro-1-octanesulfonamide

NEtFOSA-M N-ethylperfluoro-1-octanesulfonamide

NMeFOSA-M N-methylperfluoro-1-octanesulfonamide

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA N-methylperfluoro-1-octanesulfonamidoacetic acid

Perfluorooctanesulfonamidoethanols

 NEtFOSE-M
 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol

 NMeFOSE-M
 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

Telomere Sulfonic acids

4:2 FTS1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid6:2 FTS1H,1H,2H,2H-perfluoro-1-octanesulfonic acid8:2 FTS1H,1H,2H,2H-perfluoro-1-decanesulfonic acid10:2 FTS1H,1H,2H,2H-perfluorododecanesulfonic acid

Telomere Carboxylic acids

FPrPA (3:3FTA) 3-Perfluoropropyl propanoic acid

Analyte	Full Name	
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid	
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid	
Miscellaneous		
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	
F-53B (minor)	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	
Sum F-53B	Sum of F-53B components (major + minor)	
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid	
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid	
Internal Standards		
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid	
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid	
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid	
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid	
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid	
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid	
MPFHpA	Perfluoro-n-[-1,2,3,4-13C4]heptanoic acid	
M8PFOA	Perfluoro-n-[13C8]octanoic acid	
M9PFNA	Perfluoro-n-[13C9]nonanoic acid	
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid	
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid	
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid	
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid	
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide	
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide	
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide	
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid	
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid	
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol	
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol	
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid	
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid	
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid	
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid	

NR = Not Reportable

LOD = Limit of Detection

LOR = Limit of Reporting



# Certificate of Analysis

**Submission Reference: A02744125** 

**Final Report** 

**NZDF ESDAT Pattle Delamore Partners Limited** P O Box 9528 Auckland 1149 **New Zealand** 

PO Number: OHA\_PFAS

Report Issued: 09-May-2024 Sample(s) Received: 12-Apr-2024 08:15 AsureQuality Reference: 24-102531

Testing Period: 15-Apr-2024 to 09-May-2024 Date of analysis is available on request.

## Results

Report Number: 3749219

The tests were performed on the samples as received.

Customer Sample Name: OHA_SW36_100424			<b>Lab ID:</b> 24-102531-1
Sample Condition: Acceptable	Sampled Date: 10-Apr-2024		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS)	in Potable Water		
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0023	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.0021	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.0031	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.016	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.019	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.0088	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.0084	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.017	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.036	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.016	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.052	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.035	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.015	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.0067	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0015	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report: https://www.asurequality.com/about/terms-of-business/

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	126	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	139	%	AsureQuality Method (LC-MS/MS)
M8PFOS	204 (R)	%	AsureQuality Method (LC-MS/MS)
M4PFBA	98	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	92	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	106	%	AsureQuality Method (LC-MS/MS)
MPFHpA	115	%	AsureQuality Method (LC-MS/MS)
M8PFOA	116	%	AsureQuality Method (LC-MS/MS)
M9PFNA	123	%	AsureQuality Method (LC-MS/MS)
	143	%	
M6PFDA			AsureQuality Method (LC-MS/MS)
M7PFUnDA	244 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	396 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	218 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	45	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	65	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	168 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	146	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	52	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	60	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	133	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	115	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	153 (R)	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	102	%	AsureQuality Method (LC-MS/MS)
R = Recovery outside method limits			
ustomer Sample Name: OHA_AAZ_100424			<b>Lab ID:</b> 24-10253
ample Condition: Acceptable	Sampled Date: 10-Apr-2024		
Test	Result	Unit	Method Reference
bly- and Perfluorinated Alkyl Substances (PFAS) in Pota	able Water		
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0021	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.0019	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.0032	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.016	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.019	μg/L	AsureQuality Method (LC-MS/MS)
	<0.0010		
PFHpS		μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	μg/L 	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.0087	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.0092	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.018	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.037	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
РГВА	0.016	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.052	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.035	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.016	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.0065	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0016	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides	-0.0010	μg/ L	round quality inclined (LO Mormo)
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroctanesulfonamidoacetic acids	1111	₩ <b>ઝ</b> '	. sale quality motion (Lo mornio)
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols	-0.0010	F3' -	. saroquamysaroq (EO mormo)
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
552 111	-0.0010	P9/ □	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	152 (R)	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	159 (R)	%	AsureQuality Method (LC-MS/MS)
M8PFOS	242 (R)	%	AsureQuality Method (LC-MS/MS)
M4PFBA	113	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	106	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	128	%	AsureQuality Method (LC-MS/MS)
MPFHpA	124	%	AsureQuality Method (LC-MS/MS)
M8PFOA	136	%	AsureQuality Method (LC-MS/MS)
M9PFNA	148	%	AsureQuality Method (LC-MS/MS)
M6PFDA	167 (R)	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	227 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	279 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	182 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	55	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	55	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	36	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	129	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	139	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	14 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	13 (R)	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	170 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	140	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	164 (R)	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	126	%	AsureQuality Method (LC-MS/MS)
R = Recovery outside method limits	<u> </u>		,
Customer Sample Name: OHA_ABA_100424			<b>Lab ID:</b> 24-102531-3
Sample Condition: Acceptable	Sampled Date: 10-Apr-2024		Lab ID. 24-102331-0
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) i			
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
<del></del>			
di-PFOS (5)	<0.0010	μg/L "	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010		AsureQuality Method (LC-MS/MS)
		μg/L	
PFTrDA	<0.0010	μg/L 	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L 	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference	
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Internal Standards				
M3PFBS	111	%	AsureQuality Method (LC-MS/MS)	
M3PFHxS	123	%	AsureQuality Method (LC-MS/MS)	
M8PFOS	156 (R)	%	AsureQuality Method (LC-MS/MS)	
M4PFBA	103	%	AsureQuality Method (LC-MS/MS)	
M5PFPeA	96	%	AsureQuality Method (LC-MS/MS)	
M5PFHxA	107	%	AsureQuality Method (LC-MS/MS)	
MPFHpA	108	%	AsureQuality Method (LC-MS/MS)	
M8PFOA	119	%	AsureQuality Method (LC-MS/MS)	
M9PFNA	125	%	AsureQuality Method (LC-MS/MS)	
M6PFDA	121	%	AsureQuality Method (LC-MS/MS)	
M7PFUnDA	179 (R)	%	AsureQuality Method (LC-MS/MS)	
MPFDoDA	256 (R)	%	AsureQuality Method (LC-MS/MS)	
MPFTeDA	150	%	AsureQuality Method (LC-MS/MS)	
MPFOSA	111	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSA	168 (R)	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSA	69	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSAA	162 (R)	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSAA	152 (R)	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSE	95	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSE	87	%	AsureQuality Method (LC-MS/MS)	
M4:2FTS	115	%	AsureQuality Method (LC-MS/MS)	
M6:2FTS	112	%	AsureQuality Method (LC-MS/MS)	
M8:2FTS	144	%	AsureQuality Method (LC-MS/MS)	
M3HFPO-DA	104	%	AsureQuality Method (LC-MS/MS)	
R = Recovery outside method limits	101	70	rediodedity method (20 monte)	
·			Lab ID: 24 d	100504.4
Customer Sample Name: OHA_ABB_100424	Samulad Data: 40 Av.: 0004		<b>Lab ID:</b> 24-7	102531-4
Sample Condition: Acceptable S	Sampled Date: 10-Apr-2024 Result	Unit	Method Reference	
		Ome	Metriou Reference	
Poly- and Perfluorinated Alkyl Substances (PFAS) in Pota	ble Water			
Perfluoroalkylsulfonic acids PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
PFBS	<0.0010		AsureQuality Method (LC-MS/MS)	
	<0.0010	μg/L	, , ,	
PFPeS		μg/L	AsureQuality Method (LC-MS/MS)	
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
mono-PFHxS (1)	<0.0010	μg/L "	AsureQuality Method (LC-MS/MS)	
L-PFHxS (1)	<0.0010	μg/L 	AsureQuality Method (LC-MS/MS)	
Total PFHxS (3)	<0.0010	μg/L 	AsureQuality Method (LC-MS/MS)	
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)	
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)	
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)	

Test	Result	Unit	Method Reference
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010		AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides	40.0010	μg/L	Astrieguality inetriou (EO-INO/INO)
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR		AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids	INIX	μg/L	Astriequality inetrior (EC-INS/INIS)
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols	40.0010	μ9/∟	Assured and Method (EO-Mo/Mo)
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids	10.0010	pg/ =	real equality method (Le merme)
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids	10.0010	pg/ =	real equality ineared (Le Me/Me)
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous	40.0010	μ9/∟	Assured and Method (EO-MO/MO)
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
	<b>40.0010</b>	μg/L	Astriequality inetrior (EC-INS/INIS)
Internal Standards M3PFBS	99	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	66	%	AsureQuality Method (LC-MS/MS)  AsureQuality Method (LC-MS/MS)
M8PFOS	37	%	AsureQuality Method (LC-MS/MS)
			, ,
M4PFBA	102	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	94	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	93	%	AsureQuality Method (LC-MS/MS)
MPFHpA	87	%	AsureQuality Method (LC-MS/MS)
M8PFOA	82	%	AsureQuality Method (LC-MS/MS)
M9PFNA	60	%	AsureQuality Method (LC-MS/MS)
M6PFDA	46	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	36	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
MPFDoDA	25 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	35	%	AsureQuality Method (LC-MS/MS)
MPFOSA	75	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	57	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	40	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	42	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	48	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	42	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	45	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	87	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	80	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	96	%	AsureQuality Method (LC-MS/MS)
R = Recovery outside method limits			
Customer Sample Name: OHA_ABC_100424			<b>Lab ID:</b> 24-102531-5
Sample Condition: Acceptable Sal	mpled Date: 10-Apr-2024		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable	Water		
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids		F-9-	
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols		7.5	
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			, , ,
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids	0.00.10	M9/ =	rical equality method (20 merme)
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous	0.00.0	M9/ =	rical equality method (20 merme)
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards	40.0010	ру/с	Astriequality Method (EC-MO/MO)
M3PFBS	104	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	104	%	AsureQuality Method (LC-MS/MS)
M8PFOS	127	%	AsureQuality Method (LC-MS/MS)
M4PFBA	94	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	85	%	
	94	%	AsureQuality Method (LC-MS/MS)
M5PFHxA			AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	101	%	AsureQuality Method (LC-MS/MS)
M9PFNA	107	%	AsureQuality Method (LC-MS/MS)
M6PFDA	109	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	109	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	109	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	55	%	AsureQuality Method (LC-MS/MS)
MPFOSA	73	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	62	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	27 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	106	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	16 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	31	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	115	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	98	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
R = Recovery outside method limits			

# QC Results

## Blank

Relates to sample(s) 24-102531-1, 24-102531-2, 24-102531-3, 24-102531-4, 24-102531-5

'ater		
<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
NR	μg/L	AsureQuality Method (LC-MS/MS)
<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
<0.0010		AsureQuality Method (LC-MS/MS)
NR		AsureQuality Method (LC-MS/MS)
<0.0010		AsureQuality Method (LC-MS/MS)
<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NR		AsureQuality Method (LC-MS/MS)
NR		AsureQuality Method (LC-MS/MS)
	r <i>y</i> =	
<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
<0.0010		AsureQuality Method (LC-MS/MS)
	r-d/ =-	- , , ,
<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
		AsureQuality Method (LC-MS/MS)
	<0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0020  NR <0.0020  NR <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 NR <0.0010 NR <0.0010 NR <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 <0.0010 NR <0.0010 <0.0010 <0.0010 NR <0.0010 <0.0010 NR <0.0010 <0.0010 NR <0.0010 NR NR <0.0010	Color   Colo

Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
nternal Standards			
M3PFBS	97	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	74	%	AsureQuality Method (LC-MS/MS)
M8PFOS	44	%	AsureQuality Method (LC-MS/MS)
M4PFBA	107	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	102	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	101	%	AsureQuality Method (LC-MS/MS)
MPFHpA	101	%	AsureQuality Method (LC-MS/MS)
M8PFOA	83	%	AsureQuality Method (LC-MS/MS)
M9PFNA	68	%	AsureQuality Method (LC-MS/MS)
M6PFDA	53	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	28 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	18 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	15 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	58	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	21 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	29 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	33	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	49	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	45	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	46	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	106	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	96	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	99	%	AsureQuality Method (LC-MS/MS)
		70	,,

R = Recovery outside method limits

# **Analysis Summary**

Wellington Laboratory					
Analysis	Method	Accreditation	Authorised by		
Poly- and Perfluorinated Alkyl Sub	stances (PFAS) in Potable Water				
DX-PFCS01, 03-SUITE_B	AsureQuality Method (LC-MS/MS)	IANZ	Amelie Sellier		

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9CI-PF3ONS (F-53B major) and 11CI-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable



Amelie Sellier Scientist

### **Accreditation**





Report Issued: 09-May-2024

# **Appendix**

# **Analyte LOR Summary**

Poly, and Perfluoringted Alley Substances	s (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)
FUIV- ALIU FELIUULIIIALEU AIKVI SUDSLALICES	S (FFAS) III FULADIE WALEI - ASUIEQUAIILV MELITUU (LC-MIS/MIS)

Poly- and Penluonnated Aikyi Substances (PPAS)	ill Polable Water - Astreguality Metriod (EC-MS/I
Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 μg/L
PFBS	0.0010 μg/L
PFPeS	0.0010 μg/L
di-PFHxS (1)	0.0010 μg/L
mono-PFHxS (1)	0.0010 μg/L
L-PFHxS (1)	0.0010 μg/L
Total PFHxS (3)	0.0010 μg/L
PFHpS	0.0010 μg/L
di-PFOS (5)	0.0010 μg/L
mono-PFOS (5)	0.0010 μg/L
L-PFOS (5)	0.0010 μg/L
Total PFOS (7)	0.0010 μg/L
Sum PFHxS+PFOS (1)	0.0010 μg/L
PFNS	0.0010 μg/L
PFDS	NR µg/L
PFECHS	0.0010 μg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 μg/L
PFPeA	0.0010 μg/L
PFHxA	0.0010 μg/L
PFHpA	0.0010 μg/L
PFOA	0.0010 μg/L
PFNA	0.0010 μg/L
PFDA	0.0010 μg/L
PFUnDA	0.0010 μg/L
PFDoDA	0.0010 μg/L
PFTrDA	0.0010 μg/L
PFTeDA	NR µg/L
P37DMOA	0.0010 μg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 μg/L
NEtFOSA-M	NR µg/L
NMeFOSA-M	NR µg/L
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 μg/L
NMeFOSAA	0.0010 μg/L
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	0.0010 μg/L
NMeFOSE-M	0.0010 μg/L
Telomere Sulfonic acids	
4:2 FTS	0.0010 μg/L
6:2 FTS	0.0010 μg/L
8:2 FTS	0.0010 μg/L
10:2 FTS	0.0010 μg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 μg/L
FPePA (5:3FTA)	0.0010 μg/L
	-

FHpPA (7:3FTA)	0.0010 μg/L
Miscellaneous	
F-53B (major)	0.0010 μg/L
F-53B (minor)	0.0010 μg/L
Sum F-53B	0.0010 μg/L
ADONA	0.0010 μg/L
HFPO-DA (GenX)	0.0010 μg/L

#### **Analyte Definitions**

#### Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte Full Name

Perfluoroalkylsulfonic acids

PFPS Perfluoro-1-propanesulfonic acid
PFBS Perfluoro-1-butanesulfonic acid
PFPeS Perfluoro-1-pentanesulfonic acid

di-PFHxS (1)
Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)
Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)
Linear Perfluorohexanesulfonic acid
PFHpS
Perfluoro-1-heptanesulfonic acid

di-PFOS (5)

Total Perfluorodimethylhexane sulfonic acids mono-PFOS (5)

Total Perfluoromethylheptane sulfonic acids L-PFOS (5)

Linear Perfluoroctanesulfonic acid

PFNS

Perfluoro-1-nonanesulfonic acid

PFDS

Perfluoro-1-decanesulfonic acid

PFECHS Perfluoro-4-ethylcyclohexanesulfonic acid

Perfluoroalkylcarboxylic acids

PFBA Perfluoro-n-butanoic acid PFPeA Perfluoro-n-pentanoic acid PFHxA Perfluoro-n-hexanoic acid PFHpA Perfluoro-n-heptanoic acid PFOA Perfluoro-n-octanoic acid PFNA Perfluoro-n-nonanoic acid PFDA Perfluoro-n-decanoic acid PFUnDA Perfluoro-n-undecanoic acid PFDoDA Perfluoro-n-dodecanoic acid PFTrDA Perfluoro-n-tridecanoic acid PFTeDA Perfluoro-n-tetradecanoic acid P37DMOA Perfluoro-3,7-dimethyloctanoic acid

Perfluorooctanesulfonamides

PFOSA Perfluoro-1-octanesulfonamide

NEtFOSA-M N-ethylperfluoro-1-octanesulfonamide

NMeFOSA-M N-methylperfluoro-1-octanesulfonamide

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA N-methylperfluoro-1-octanesulfonamidoacetic acid

Perfluorooctanesulfonamidoethanols

 NEtFOSE-M
 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol

 NMeFOSE-M
 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

Telomere Sulfonic acids

4:2 FTS 1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS 1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS 1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS 1H,1H,2H,2H-perfluorododecanesulfonic acid

Telomere Carboxylic acids

FPrPA (3:3FTA) 3-Perfluoropropyl propanoic acid

AsureQuality Reference: 24-102531 Report Issued: 09-May-2024

•	
Analyte	Full Name
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid
Miscellaneous	
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid
F-53B (minor)	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid
Sum F-53B	Sum of F-53B components (major + minor)
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid
Internal Standards	
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid
MPFHpA	Perfluoro-n-[-1,2,3,4-13C4]heptanoic acid
M8PFOA	Perfluoro-n-[13C8]octanoic acid
M9PFNA	Perfluoro-n-[13C9]nonanoic acid
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid
LOR = Limit of Reporting	LOD = Limit of Detection NR = Not Reportable



# Certificate of Analysis

Submission Reference: A02744124

**Final Report** 

**NZDF ESDAT Pattle Delamore Partners Limited** P O Box 9528 Auckland 1149 **New Zealand** 

PO Number: OHA\_PFAS

Report Issued: 09-May-2024 AsureQuality Reference: 24-103785 Sample(s) Received: 12-Apr-2024 08:15

Testing Period: 15-Apr-2024 to 09-May-2024 Date of analysis is available on request.

#### Results

Report Number: 3749211

The tests were performed on the samples as received.

Customer Sample Name: OHA_WS1_10042	24		<b>Lab ID:</b> 24-103785-1
Sample Condition: Acceptable	Sampled Date: 10-Apr-2024		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (I	PFAS) in Potable Water		
Perfluoroalkylsulfonic acids			
PFPrS	0.013	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.028	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.025	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.036	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.15	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.19	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0033	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0037	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.030	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.021	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.055	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.24	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.026	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.14	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.11	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.038	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.032	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.011	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report: https://www.asurequality.com/about/terms-of-business/

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	0.0016	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.16	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	131	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	137	%	AsureQuality Method (LC-MS/MS)
M8PFOS	190 (R)	%	AsureQuality Method (LC-MS/MS)
M4PFBA	106	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	95	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	114	%	AsureQuality Method (LC-MS/MS)
MPFHpA	126	%	AsureQuality Method (LC-MS/MS)
M8PFOA	117	%	AsureQuality Method (LC-MS/MS)
M9PFNA	136	%	AsureQuality Method (LC-MS/MS)
M6PFDA	146	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	202 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	265 (R)	%	AsureQuality Method (LC-MS/MS)
	77	%	, ,
MPFTeDA			AsureQuality Method (LC-MS/MS)
MPFOSA	112	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	116	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	63	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	154 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	129	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	69	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	59	%	AsureQuality Method (LC-MS/MS)

Report Number: 3749211

Test	Result	Unit	Method Reference
M4:2FTS	124	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	131	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	152 (R)	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	108	%	AsureQuality Method (LC-MS/MS)
R = Recovery outside method limits			
Customer Sample Name: Duplicate of 24-10378	85-1A		<b>Lab ID:</b> 24-10378
Sample Description: OHA_WS1_100424 Duplic			
Sample Condition: Acceptable	Sampled Date: 10-Apr-2024		
Test	Result	Unit	Method Reference
oly- and Perfluorinated Alkyl Substances (PFA	S) in Potable Water		
Perfluoroalkylsulfonic acids	,		
PFPrS	0.013	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.028	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.027	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.034	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.15	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.18	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0029		· , , ,
•		μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0030	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.026	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.019	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.048	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.23	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.026	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.14	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.12	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.041	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.033	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.011	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides	-0.0010	μa, <u>−</u>	
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids	1413	ra, -	. saleddam, mened (Le mene)
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols	0.00.0	r-o-	,
Peninorocianesimonamionemenie			

Test	Result	Unit	Method Reference
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	0.0018	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.16	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	120	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	138	%	AsureQuality Method (LC-MS/MS)
M8PFOS	180 (R)	%	AsureQuality Method (LC-MS/MS)
M4PFBA	102	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	91	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	102	%	AsureQuality Method (LC-MS/MS)
MPFHpA	113	%	AsureQuality Method (LC-MS/MS)
M8PFOA	108	%	AsureQuality Method (LC-MS/MS)
M9PFNA	114	%	AsureQuality Method (LC-MS/MS)
M6PFDA	135	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	179 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	242 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	126	%	AsureQuality Method (LC-MS/MS)
MPFOSA	101	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	171 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	90	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	115	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	106	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	67	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	59	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	110	%	AsureQuality Method (LC-MS/MS)
	125	%	· , , ,
M6:2FTS			AsureQuality Method (LC-MS/MS)
M8:2FTS	144	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	108	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

## **QC** Results

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Relates to sample(s) 24-103785-1, 24-103785-2

st	Result	Unit	Method Reference
ly- and Perfluorinated Alkyl Substances (PFAS) in Potable V	Vater		
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids		7.0	
PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides		7.0	
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids		7.0	
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
			· · · · · · · · · · · · · · · · · · ·

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est	Result	Unit	Method Reference
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	97	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	74	%	AsureQuality Method (LC-MS/MS)
M8PFOS	44	%	AsureQuality Method (LC-MS/MS)
M4PFBA	107	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	102	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	101	%	AsureQuality Method (LC-MS/MS)
MPFHpA	101	%	AsureQuality Method (LC-MS/MS)
M8PFOA	83	%	AsureQuality Method (LC-MS/MS)
M9PFNA	68	%	AsureQuality Method (LC-MS/MS)
M6PFDA	53	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	28 (R)	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	18 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	15 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	58	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	21 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	29 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	33	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	49	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	45	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	46	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	106	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	96	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	99	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

## **Analysis Summary**

Report Number: 3749211

Wellington Laboratory					
Analysis Method Accreditation Authorised by					
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water					
DX-PFCS01, 03-SUITE_B	AsureQuality Method (LC-MS/MS)	IANZ	Amelie Sellier		

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9CI-PF3ONS (F-53B major) and 11CI-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

Allin

Amelie Sellier Scientist

## **Accreditation**





Report Issued: 09-May-2024

# **Appendix**

# **Analyte LOR Summary**

Report Number: 3749211

Poly, and Perfluoringted Alley Substances	s (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)
FUIV- ALIU FELIUULIIIALEU AIKVI SUDSLALICES	S (FFAS) III FULADIE WALEI - ASUIEQUAIILV MELITUU (LC-MIS/MIS)

Poly- and Penidonnated Aikyi Substances (PPAS)	ill Polable Water - Astreguality Metriod (LC-MS
Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 μg/L
PFBS	0.0010 μg/L
PFPeS	0.0010 μg/L
di-PFHxS (1)	0.0010 μg/L
mono-PFHxS (1)	0.0010 μg/L
L-PFHxS (1)	0.0010 μg/L
Total PFHxS (3)	0.0010 μg/L
PFHpS	0.0010 μg/L
di-PFOS (5)	0.0010 μg/L
mono-PFOS (5)	0.0010 μg/L
L-PFOS (5)	0.0010 μg/L
Total PFOS (7)	0.0010 μg/L
Sum PFHxS+PFOS (1)	0.0010 μg/L
PFNS	0.0010 μg/L
PFDS	NR µg/L
PFECHS	0.0010 μg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 μg/L
PFPeA	0.0010 μg/L
PFHxA	0.0010 μg/L
PFHpA	0.0010 μg/L
PFOA	0.0010 μg/L
PFNA	0.0010 μg/L
PFDA	0.0010 μg/L
PFUnDA	0.0010 μg/L
PFDoDA	0.0010 μg/L
PFTrDA	0.0010 μg/L
PFTeDA	NR µg/L
P37DMOA	0.0010 μg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 μg/L
NEtFOSA-M	NR µg/L
NMeFOSA-M	NR µg/L
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 μg/L
NMeFOSAA	0.0010 μg/L
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	0.0010 μg/L
NMeFOSE-M	0.0010 μg/L
Telomere Sulfonic acids	
4:2 FTS	0.0010 μg/L
6:2 FTS	0.0010 μg/L
8:2 FTS	0.0010 μg/L
10:2 FTS	0.0010 μg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 μg/L
FPePA (5:3FTA)	0.0010 μg/L

FHpPA (7:3FTA)	0.0010 μg/L
Miscellaneous	
F-53B (major)	0.0010 μg/L
F-53B (minor)	0.0010 μg/L
Sum F-53B	0.0010 μg/L
ADONA	0.0010 μg/L
HFPO-DA (GenX)	0.0010 μg/L

#### **Analyte Definitions**

#### Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte Full Name

Perfluoroalkylsulfonic acids

PFPrS Perfluoro-1-propanesulfonic acid
PFBS Perfluoro-1-butanesulfonic acid
PFPeS Perfluoro-1-pentanesulfonic acid

 di-PFHxS (1)
 Total Perfluorodimethylbutane sulfonic acids

 mono-PFHxS (1)
 Total Perfluoromethylpentane sulfonic acids

 L-PFHxS (1)
 Linear Perfluorohexanesulfonic acid

 PFHpS
 Perfluoro-1-heptanesulfonic acid

di-PFOS (5)

Total Perfluorodimethylhexane sulfonic acids mono-PFOS (5)

Total Perfluoromethylheptane sulfonic acids L-PFOS (5)

Linear Perfluoroctanesulfonic acid

PFNS

Perfluoro-1-nonanesulfonic acid

PFDS

Perfluoro-1-decanesulfonic acid

PFECHS Perfluoro-4-ethylcyclohexanesulfonic acid

Perfluoroalkylcarboxylic acids

PFBA Perfluoro-n-butanoic acid PFPeA Perfluoro-n-pentanoic acid PFHxA Perfluoro-n-hexanoic acid PFHpA Perfluoro-n-heptanoic acid PFOA Perfluoro-n-octanoic acid PFNA Perfluoro-n-nonanoic acid PFDA Perfluoro-n-decanoic acid PFUnDA Perfluoro-n-undecanoic acid PFDoDA Perfluoro-n-dodecanoic acid PFTrDA Perfluoro-n-tridecanoic acid PFTeDA Perfluoro-n-tetradecanoic acid P37DMOA Perfluoro-3,7-dimethyloctanoic acid

Perfluorooctanesulfonamides

PFOSA Perfluoro-1-octanesulfonamide

NEtFOSA-M N-ethylperfluoro-1-octanesulfonamide

NMeFOSA-M N-methylperfluoro-1-octanesulfonamide

Perfluorooctanesulfonamidoacetic acids

NEtFOSAA N-ethylperfluoro-1-octanesulfonamidoacetic acid
NMeFOSAA N-methylperfluoro-1-octanesulfonamidoacetic acid

Perfluorooctanesulfonamidoethanols

 NEtFOSE-M
 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol

 NMeFOSE-M
 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

Telomere Sulfonic acids

4:2 FTS 1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS 1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS 1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS 1H,1H,2H,2H-perfluorododecanesulfonic acid

Telomere Carboxylic acids

FPrPA (3:3FTA) 3-Perfluoropropyl propanoic acid

AsureQuality Reference: 24-103785 Report Issued: 09-May-2024

Addicación y Reference. 24-19	100700	
Analyte	Full Name	
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid	
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid	
Miscellaneous		
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	
F-53B (minor)	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	
Sum F-53B	Sum of F-53B components (major + minor)	
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid	
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid	
Internal Standards		
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid	
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid	
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid	
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid	
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid	
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid	
MPFHpA	Perfluoro-n-[-1,2,3,4-13C4]heptanoic acid	
M8PFOA	Perfluoro-n-[13C8]octanoic acid	
M9PFNA	Perfluoro-n-[13C9]nonanoic acid	
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid	
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid	
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid	
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid	
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide	
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide	
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide	
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid	
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid	
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol	
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol	
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid	
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid	
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid	
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid	
LOR = Limit of Reporting	LOD = Limit of Detection NR = Not Reportable	



# Certificate of Analysis

Submission Reference: A02744124

**Final Report** 

**NZDF ESDAT Pattle Delamore Partners Limited** P O Box 9528 Auckland 1149 **New Zealand** 

PO Number: OHA\_PFAS

Report Issued: 09-May-2024 Sample(s) Received: 12-Apr-2024 08:15 AsureQuality Reference: 24-103788

Testing Period: 15-Apr-2024 to 09-May-2024 Date of analysis is available on request.

#### Results

Report Number: 3749199

The tests were performed on the samples as received.

Customer Sample Name: OHA_WS2_10042	24		<b>Lab ID:</b> 24-103788-1
Sample Condition: Acceptable	Sampled Date: 10-Apr-2024		
Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (F	PFAS) in Potable Water		
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.0025	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.0025	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.0017	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.0031	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.0048	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.0073	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.0031	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.0031	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.0019	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.0013	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.0015	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

AsureQuality Ltd has used reasonable skill, care, and effort to provide an accurate analysis of the sample(s) which form(s) the subject of this report. However, the accuracy of this analysis is reliant on, and subject to, the sample(s) provided by you and your responsibility as to transportation of the sample(s). AsureQuality Ltd's standard terms of business apply to the analysis set out in this report: https://www.asurequality.com/about/terms-of-business/

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			. , ,
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	NR	μg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	NR	μg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Internal Standards		10	, , ,
M3PFBS	96	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	66	%	AsureQuality Method (LC-MS/MS)
M8PFOS	36	%	AsureQuality Method (LC-MS/MS)
M4PFBA	96	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	93	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	95	%	AsureQuality Method (LC-MS/MS)
MPFHpA	86	%	AsureQuality Method (LC-MS/MS)
	74	%	
M8PFOA			AsureQuality Method (LC-MS/MS)
M9PFNA	65	%	AsureQuality Method (LC-MS/MS)
M6PFDA	49	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	36	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	29 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	6 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	53	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	24 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	50	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	32	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	40	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	42	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	53	%	AsureQuality Method (LC-MS/MS)
			· · · · · · · · · · · · · · · · · · ·

Test	Result	Unit	Method Reference
M4:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	50	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	93	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

## **QC Results**

#### **Blank**

Relates to sample(s) 24-103788-1

est	Result	Unit	Method Reference
oly- and Perfluorinated Alkyl Substances (PFAS) in Pota	able Water		
Perfluoroalkylsulfonic acids			
PFPrS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFBS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	μg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	NR	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	μg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference	
NMeFOSAA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Perfluorooctanesulfonamidoethanols				
NEtFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
NMeFOSE-M	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Telomere Sulfonic acids				
4:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
6:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
8:2 FTS	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
10:2 FTS	NR	μg/L	AsureQuality Method (LC-MS/MS)	
Telomere Carboxylic acids				
FPrPA (3:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
FPePA (5:3FTA)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
FHpPA (7:3FTA)	NR	μg/L	AsureQuality Method (LC-MS/MS)	
Miscellaneous				
F-53B (major)	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)	
F-53B (minor)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Sum F-53B	<0.0020	μg/L	AsureQuality Method (LC-MS/MS)	
ADONA	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
HFPO-DA (GenX)	<0.0010	μg/L	AsureQuality Method (LC-MS/MS)	
Internal Standards				
M3PFBS	100	%	AsureQuality Method (LC-MS/MS)	
M3PFHxS	100	%	AsureQuality Method (LC-MS/MS)	
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)	
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)	
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)	
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)	
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)	
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)	
M9PFNA	100	%	AsureQuality Method (LC-MS/MS)	
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)	
M7PFUnDA	100	%	AsureQuality Method (LC-MS/MS)	
MPFDoDA	100	%	AsureQuality Method (LC-MS/MS)	
MPFTeDA	100	%	AsureQuality Method (LC-MS/MS)	
MPFOSA	100	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSA	100	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSA	100	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSAA	100	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSAA	100	%	AsureQuality Method (LC-MS/MS)	
DNEtFOSE	100	%	AsureQuality Method (LC-MS/MS)	
DNMeFOSE	100	%	AsureQuality Method (LC-MS/MS)	
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)	
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)	
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)	
M3HFPO-DA	100	%	AsureQuality Method (LC-MS/MS)	

AsureQuality Reference: 24-103788 Report Issued: 09-May-2024

#### **Analysis Summary**

### **Wellington Laboratory**

Analysis Method Accreditation Authorised by

Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water

DX-PFCS01, 03-SUITE\_B AsureQuality Method (LC-MS/MS) IANZ Amelie Sellier

di-PFHxS (1) = Concentration determined using a branched di-PFHxS isomer standard (399>80 transition)

mono-PFHxS (1) = Concentration determined using a branched mono-PFHxS isomer standard (399>80 transition)

L-PFHxS (1) = Concentration determined using the linear PFHxS isomer standard (399>80 transition)

Total PFHxS (3) = The numerical sum of di-PFHxS (1), mono-PFHxS (1), and L-PFHxS (1)

di-PFOS (5) = Concentration determined using a branched di-PFOS isomer standard (499>80 transition)

mono-PFOS (5) = Concentration determined using a branched mono-PFOS isomer standard (499>80 transition)

L-PFOS (5) = Concentration determined using the linear PFOS isomer standard (499>230 transition)

Total PFOS (7) = The numerical sum of di-PFOS (5), mono-PFOS (5), and L-PFOS (5)

Sum PFHxS+PFOS (1) = The numerical sum of Total PFHxS (3) and Total PFOS (7)

Sum F-53B = The numerical sum of 9CI-PF3ONS (F-53B major) and 11CI-PF3OUdS (F-53B minor)

For all Totals, where a component is detected below the LOR, the value of zero is used in the calculation of the sum. The result represents the lower-bound concentration present in the sample.

Reported results are corrected for internal standard recovery

Results that are prefixed with '<' indicate the lowest level at which the analyte can be reported, and that in this case the analyte was not observed above this limit.

NR = Not Reportable

Addien

Amelie Sellier

Scientist

#### **Accreditation**





Report Issued: 09-May-2024

# **Appendix**

# **Analyte LOR Summary**

Poly, and Perfluoringted Alley Substances	s (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)
FUIV- ALIU FELIUULIIIALEU AIKVI SUDSLALICES	S (FFAS) III FULADIE WALEI - ASUIEQUAIILV MELITUU (LC-MIS/MIS)

1 ory and 1 ornaormatou / artyl Gabotanooc (1 1 / 10)	in readic valor reare early medica (20 men
Analyte	LOR
Perfluoroalkylsulfonic acids	
PFPrS	0.0010 μg/L
PFBS	0.0010 μg/L
PFPeS	0.0010 μg/L
di-PFHxS (1)	0.0010 μg/L
mono-PFHxS (1)	0.0010 μg/L
L-PFHxS (1)	0.0010 μg/L
Total PFHxS (3)	0.0010 μg/L
PFHpS	0.0010 μg/L
di-PFOS (5)	0.0010 μg/L
mono-PFOS (5)	0.0010 μg/L
L-PFOS (5)	0.0010 μg/L
Total PFOS (7)	0.0010 μg/L
Sum PFHxS+PFOS (1)	0.0010 μg/L
PFNS	0.0010 μg/L
PFDS	NR µg/L
PFECHS	0.0010 μg/L
Perfluoroalkylcarboxylic acids	
PFBA	0.0010 μg/L
PFPeA	0.0010 μg/L
PFHxA	0.0010 μg/L
PFHpA	0.0010 μg/L
PFOA	0.0010 μg/L
PFNA	0.0010 μg/L
PFDA	0.0010 μg/L
PFUnDA	0.0010 μg/L
PFDoDA	0.0010 μg/L
PFTrDA	NR µg/L
PFTeDA	NR µg/L
P37DMOA	NR µg/L
Perfluorooctanesulfonamides	
PFOSA	0.0010 μg/L
NEtFOSA-M	NR µg/L
NMeFOSA-M	0.0010 μg/L
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 μg/L
NMeFOSAA	0.0010 μg/L
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	0.0010 μg/L
NMeFOSE-M	0.0010 μg/L
Telomere Sulfonic acids	
4:2 FTS	0.0010 μg/L
6:2 FTS	0.0010 μg/L
8:2 FTS	0.0010 μg/L
10:2 FTS	NR µg/L
Telomere Carboxylic acids	. •
FPrPA (3:3FTA)	0.0010 μg/L
FPePA (5:3FTA)	0.0010 μg/L
,	. •

FHpPA (7:3FTA)	NR µg/L
Miscellaneous	
F-53B (major)	0.0010 μg/L
F-53B (minor)	0.0010 μg/L
Sum F-53B	0.0010 μg/L
ADONA	0.0010 μg/L
HFPO-DA (GenX)	0.0010 μg/L

#### **Analyte Definitions**

#### Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water - AsureQuality Method (LC-MS/MS)

Analyte Full Name

Perfluoroalkylsulfonic acids

PFPrS Perfluoro-1-propanesulfonic acid
PFBS Perfluoro-1-butanesulfonic acid
PFPeS Perfluoro-1-pentanesulfonic acid

 di-PFHxS (1)
 Total Perfluorodimethylbutane sulfonic acids

 mono-PFHxS (1)
 Total Perfluoromethylpentane sulfonic acids

 L-PFHxS (1)
 Linear Perfluorohexanesulfonic acid

 PFHpS
 Perfluoro-1-heptanesulfonic acid

di-PFOS (5)

Total Perfluorodimethylhexane sulfonic acids mono-PFOS (5)

Total Perfluoromethylheptane sulfonic acids L-PFOS (5)

Linear Perfluoroctanesulfonic acid

PFNS

Perfluoro-1-nonanesulfonic acid

PFDS

Perfluoro-1-decanesulfonic acid

PFECHS Perfluoro-4-ethylcyclohexanesulfonic acid

Perfluoroalkylcarboxylic acids

PFBA Perfluoro-n-butanoic acid PFPeA Perfluoro-n-pentanoic acid PFHxA Perfluoro-n-hexanoic acid PFHpA Perfluoro-n-heptanoic acid PFOA Perfluoro-n-octanoic acid PFNA Perfluoro-n-nonanoic acid PFDA Perfluoro-n-decanoic acid PFUnDA Perfluoro-n-undecanoic acid PFDoDA Perfluoro-n-dodecanoic acid PFTrDA Perfluoro-n-tridecanoic acid PFTeDA Perfluoro-n-tetradecanoic acid P37DMOA Perfluoro-3,7-dimethyloctanoic acid

Perfluorooctanesulfonamides

PFOSA Perfluoro-1-octanesulfonamide

NEtFOSA-M N-ethylperfluoro-1-octanesulfonamide

NMeFOSA-M N-methylperfluoro-1-octanesulfonamide

Perfluorooctanesulfonamidoacetic acids

 NEtFOSAA
 N-ethylperfluoro-1-octanesulfonamidoacetic acid

 NMeFOSAA
 N-methylperfluoro-1-octanesulfonamidoacetic acid

Perfluorooctanesulfonamidoethanols

 NEtFOSE-M
 2-(N-ethylperfluoro-1-octanesulfonamido)-ethanol

 NMeFOSE-M
 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol

Telomere Sulfonic acids

4:2 FTS 1H,1H,2H,2H-perfluoro-1-hexanesulfonic acid
6:2 FTS 1H,1H,2H,2H-perfluoro-1-octanesulfonic acid
8:2 FTS 1H,1H,2H,2H-perfluoro-1-decanesulfonic acid
10:2 FTS 1H,1H,2H,2H-perfluorododecanesulfonic acid

Telomere Carboxylic acids

FPrPA (3:3FTA) 3-Perfluoropropyl propanoic acid

AsureQuality Reference: 24-103788 Report Issued: 09-May-2024

AsureQuality Reference: 24-103788		Report Issued: 09-May-2024
Analyte	Full Name	
FPePA (5:3FTA)	3-Perfluoropentyl propanoic acid	
FHpPA (7:3FTA)	3-Perfluoroheptyl propanoic acid	
Miscellaneous		
F-53B (major)	9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid	
F-53B (minor)	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	
Sum F-53B	Sum of F-53B components (major + minor)	
ADONA	Dodecafluoro-3H-4,8-dioxanonanoic acid	
HFPO-DA (GenX)	Tetrafluoro-2-(heptafluoropropoxy)propanoic acid	
Internal Standards		
M3PFBS	Perfluoro-1-[2,3,4-13C3]butanesulfonic acid	
M3PFHxS	Perfluoro-1-[1,2,3-13C3]hexanesulfonic acid	
M8PFOS	Perfluoro-1-[13C8]octanesulfonic acid	
M4PFBA	Perfluoro-n-[1,2,3,4-13C4]butanoic acid	
M5PFPeA	Perfluoro-n-[1,2,3,4,5-13C5]pentanoic acid	
M5PFHxA	Perfluoro-n-[1,2,3,4,6-13C5]hexanoic acid	
MPFHpA	Perfluoro-n-[-1,2,3,4-13C4]heptanoic acid	
M8PFOA	Perfluoro-n-[13C8]octanoic acid	
M9PFNA	Perfluoro-n-[13C9]nonanoic acid	
M6PFDA	Perfluoro-n-[1,2,3,4,5,6-13C6]decanoic acid	
M7PFUnDA	Perfluoro-n-[1,2,3,4,5,6,7-13C7]undecanoic acid	
MPFDoDA	Perfluoro-n-[1,2-13C2]dodecanoic acid	
MPFTeDA	Perfluoro-n-[1,2-13C2]tetradecanoic acid	
MPFOSA	Perfluoro-1-[13C8]octanesulfonamide	
DNEtFOSA	N-ethyl-D5-perfluoro-1-octanesulfonamide	
DNMeFOSA	N-methyl-D3-perfluoro-1-octanesulfonamide	
DNEtFOSAA	N-ethyl-D5-perfluoro-1-octanesulfonamidoacetic acid	
DNMeFOSAA	N-methyl-D3-perfluoro-1-octanesulfonamidoacetic acid	
DNEtFOSE	2-(N-ethyl-D5-perfluoro-1-octanesulfonamido)ethan-D4-ol	
DNMeFOSE	2-(N-methyl-D3-perfluoro-1-octanesulfonamido)ethan-D4-ol	
M4:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-hexane sulfonic acid	
M6:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-octane sulfonic acid	
M8:2FTS	1H,1H,2H,2H-perfluoro-1-[1,2-13C2]-decane sulfonic acid	
M3HFPO-DA	Tetrafluoro-2-(heptafluoropropoxy)-13C3-propanoic acid	

NR = Not Reportable

LOD = Limit of Detection

LOR = Limit of Reporting



NEW ZEALAND DEFENCE FORCE AND HORIZONS REGIONAL COUNCIL - ŌHAKEA: SURFACE WATER AND GROUNDWATER MONITORING FOR PFAS, APRIL 2024

Appendix B: GW Level Measurements

Table B-1: April 2024 Well Details and Water Level

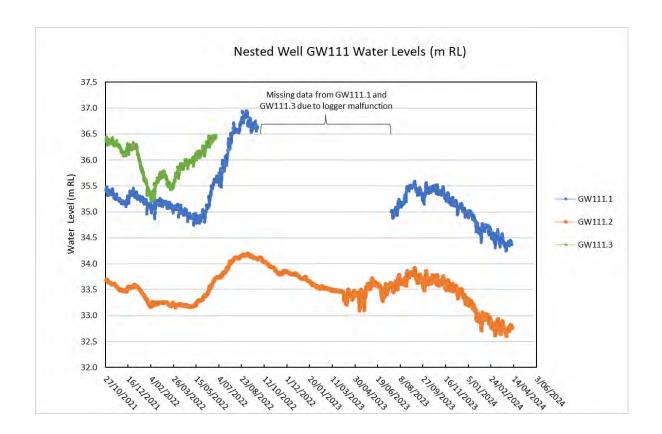
Monitoring Well Ref	GW67	GW106	GW107	GW108	GW109	GW6	MW4	MW6	MW9
Total Depth of Well (m below TOC 1)	2.96	6.81	10.71	3.88	7.82	6.74	9.90	4.43	4.53
Diameter (mm)	116	50	50	50	50	1070	50	40	40
TOC <sup>1</sup> (m below ground level)	0	0.05	0.08	0.04	0.04	0.67 m agl <sup>2</sup>	0.07	0.03	0.05
Date	11/04/2024	9/04/2024	11/04/2024	9/04/2024	11/04/2024	10/04/2024	9/04/2024		
Depth to Water (m below ground level)	-	2.63	3.25	2.05	4.78	4.87	8.03	3.66	2.11
Water depth (m below TOC)	-	2.58	3.17	2.01	4.740	5.54	7.96	3.63	2.06

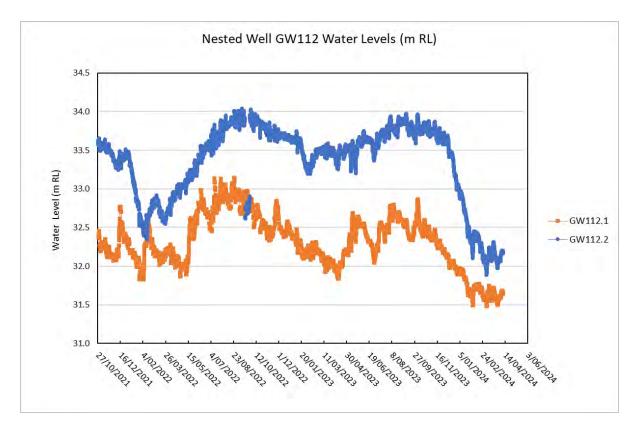
Monitoring Well Ref	GW111.1	GW111.2	GW111.3	GW112.1	GW112.2
Total Depth of Well (m below TOC 1)	11.59	38.0	81.0	10.31	50.0
Diameter (mm)	50	50	50	50	50
TOC <sup>1</sup> (m below ground level)	0.426 m agl <sup>2</sup>	0.426 m agl <sup>2</sup> 0.315 m agl <sup>2</sup>		0.494 m agl <sup>2</sup>	1.011 m agl <sup>2</sup>
Date					
Depth to Water (m below ground level)	7.05	8.89	6.57	1.50	0.71 m agl <sup>2</sup>
Water depth (m below TOC)	7.48	9.20	6.86	1.99	1.99

Notes:

1. TOC = top of casing.

2. agl = above ground level.







NEW ZEALAND DEFENCE FORCE AND HORIZONS REGIONAL COUNCIL - ŌHAKEA: SURFACE WATER AND GROUNDWATER MONITORING FOR PFAS, APRIL 2024

**Appendix C: Field Sheets** 

		NZDF I	PFAS SAMPI	LING FORI	<b>VI</b> (separ	ate form fo	r each pr	imary sample	e)	
Location:	Ohakea	a			<u> </u>	Job Number Sample Code		902744	124	
Land owner			Cana	0 000	4	(Name):	_	2014		
Address: Weather:	Acc	SSELON	s rage	1 peno	1	Date and tim	ne: _	4.4	1.0/	4/24
						Coordinates: (NZTM)	_	Е		
		Si my					_	N		
Sample po		tap /	well / surface	water		Sampled By:	_	Nathor	^	(Clean hands)
Description point:	n of sample	SAC	ream				_	Bay		(Dirty hands)
	f sample poin		CON 1							
from bore:				(n	n) 	Site Photos t	aken?	Yes 🗸	No	
Sampling equipment: Mighty gripper						Water use:		Drinking wa Fodder irrigatio		
04/04 5-	l. Cl					Animals obse	erved on	Chickens (	cows shee	p / pigs /
QA/QA Sar Duplicate	mple Codes:					site:		goats		
Duplicate		-	,			Minimum vo	lume bet	ween readings:	1 sample t	rain volume
Trip Blank			~			(see formula				
Field Blank			~							
	nk (include									
description cleaned e.g	of equipmen	nt								
		nas stabilise	d using field p	arameters		Key Stabilisa		ria: 3%, turbidity ±	10% of prio	r reading and
	onsecutive re					± 10 for value				. reading and
			TD ANGEED E	INIAI DEADI	NOS TO ST					
			Volume	Water	NGS 10 SI	ABILISATION	FIELD SHE	Dissolved	Water	Turbidity
	Time		Removed	Temp.		EC	ORP	Oxygen	Level	(NTU) / Water
- C	Elapsed	Time	(L)	(°C)	pH	((μS/cm)	(mV)	(mg/L)	(m)*	Appearance+
Before During				13.9	3.7.0	7 230	-2.9	3.74	_	17.01
During										
During										
During										
During										
During								(		
During										
During										
During During										
	CO=cloudy, T	U=turbid, SI:	=silty, SA=sand	l dy	Sample	Train Volume	Calculation	 on (L)		
4					(length o	of sample tube	e x 3.141 x	$(d^2/4000) + fl$	ow through	cell volume.
Comments								sample tube in		
					water sa	ampie interna	ι φ = 6mm	≈ 30mL per me	eter	
	quired: PFAS									
	er of water que foam produc		r unit:	No						
	ompleted and		Yes		1	etter given to	landown	er? Yes		
						BC., to		103		
Location fie	ld sheet comp	oleted?	Yes	N/A	\ \	Well field shee	t complet	ed? Yes		N/A
	criteria field		Yes Yes	N/A	ν /	Well field shee	et complet	ed? Yes		N/A

<sup>\* =</sup> needs to be recorded each time you take a set of parameters

		NZDF F	PFAS SAMPI	ING FOR	<b>M</b> (sepa	rate form fo	r each pri	mary sample	e)	
Location:	Ohakea	a			ī	Job Number Sample Code	: <u>/</u>	902744	125	
Land owne	r:					(Name):	5	5W6		
Address:	af '	Tangi	moane	3		Date and tim	ne: 🎢	10/41	04	
Weather:		J				Coordinates:	:	E		
	_					(NZTM)	_1	N		
Sample poi	nt:	tap/v	well / surface	water		Sampled By:	_	_		(Clean hands)
Description	of sample	231.	1				_	_		(Dirty hands)
point:	sample poin	<u>Ditc</u>	<i>'</i>		_		_			
from bore:	sumple poin	_		(r	n)	Site Photos t	aken?	Yes	No	
Sampling e	quipment:	Mie	inty Gr	ipper		Water use:	F	Drinking wa Godder irrigatio		
						Animals obse	erved on	Chickens	cows shee	p/pigs/
QA/QA San Duplicate	nple Codes:		خبر			site:		goats		
					_			een readings:	1 sample tr	ain volume
Trip Blank						(see formula	below)			
Field Blank		-	_							
Rinsate Blan	nk (include of equipmen	ıt	_		_					
cleaned e.g						Key Stabilisa	tion Criteri	ia:		
			d using field p	arameters		pH ± 0.1, EC	± 3%, T ± 3	%, turbidity ± 3	L0% of prio	r reading and
below (3 co	nsecutive re	adings)				± 10 for value	es greater	than 10 NTU		
	5		TRANSFER F	INAL READI	NGS TO S	STABILISATION	FIELD SHEE	ΞT		
			Volume	Water				Dissolved	Water	Turbidity
	Time Elapsed	Time	Removed (L)	Temp. (°C)	рН	EC ((μS/cm)	ORP (mV)	Oxygen (mg/L)	Level (m)*	(NTU) / Water Appearance†
Before		,,,,,,	(=)	( 0)	PII	((ps/cm/	(1117)	(11187 -1	(111)	Appearance
During										
During										
During										
During	1									
During										
During During										
During										
During										
During										
	CO=cloudy, T	U=turbid, SI=	silty, SA=sand	dy	(length	e Train Volume of sample tube	e x 3.141 x	$d^2 / 4000) + flo$		cell volume.
Comments						d = internal dia		•		
					waters	sample interna	1 Ø = 6mm	≈ 30mL per me	eter	
	Ditch	Day	- San	noll 1	not 1	olleetco	d .			
				PW		, ch co	-			
									-	
	quired: PFAS			-						
	er of water qu foam produc		Yes Yes	□ No						
	mpleted and		Yes			Letter given to	landowno	r? Yes		
	d sheet comp		Yes	N/A		Well field shee			Г	N/A
	criteria field		Yes			Hold slice				
completeut										

<sup>\* =</sup> needs to be recorded each time you take a set of parameters

Land owner: Address: Address: Address: OVCCASA  Sample point:  Lap / well / sprince watch Description of sample point from bore:  CA/QA Sample codes: Duplicate AARB  Trip Blank Rinsate Blank (include description of equipment)  Trip Blank Rinsate Blank (include description of equipment)  TRANSER FINAL BRODNOS TO STABUISATION FIELD SHET  Trip Blank Fine Blapsed Time Removed Forms Blapsed Time Blapsed Time COVERNA STABLES FINAL BRODNOS TO STABUISATION FIELD SHET  TRANSER FINAL BRODNOS TO STABUISATION FIELD SHET  Trip Blank Forms Blapsed Time Blapsed Time Coverna Blapsed Time Blapsed Time Coverna Blapsed Time Blapsed Time Coverna Blapsed Time Coverna Blapsed Time Blapsed Time Coverna Blapsed Time Blapsed Time Coverna			NZDF F	PFAS SAMP	LING FORI	<b>M</b> (separ	ate form fo	r each pr	rimary sa	mple)		
Land owner:   Address:   Weather:   Date and time:   S:2T   O 44   U4	Location:	<u>Ohake</u>	a			1			AOZ	744	1125	
Weather:    Coordinates:   E	Land owne	r:						_	SW	36		
Sample point: tap / well / surface ware)  Description of sample point  Sample goulpment:		off	Compi	on Ro	ad.		Date and tin	ne:	5:2	7	0/4	124
Sample point:   tap / well / sufface wate)   Sample point:   tap / well / sufface wate)   Description of sample point:   Distance of sample point   Trom bore:   (m)   Site Photos taken?   Water use:   Prodder Irrigation / Site Photos taken?   Priss   Priss   National Photos   National	Weather:						Coordinates	:	Е			
Sample point:		0	vercas	4				_				
Description of sample point from bore:    Sampling equipment:	Sample poi				water	_	Sampled By:	-	-	10	-	(Clean hands)
Doilistance of sample point   (m)   Site Photos taken?     Yes   No   No   No   No   No   No   No   N								-	Na	har	)	
Ste Photos taken   Py res   No		or sumple						_	1-0			()
Sampling equipment:  Sampling equipment:  Water use:  Fodder irrigation Ruen-potable  Animals observed on chickens / cowy, sheep / pigs / goats  Discovery from the pigs of pi		sample poir	nt		(n	n)	Site Photos t	taken?	Ves	П	No	
Sampling equipment:  OA/QA Sample Codes: Duplicate  Trip Blank Field Blank Rinsate Blank (Include description of equipment cleaned e.g. dipper) NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)  TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET  Time Removed Temp. Elapsed Time (J) (*C) pH ((u,S/cm) (m/V) (mg/L) (m)*  Puring During	from bore:		-		(1)		Site i flotos t	aken:		_		
Site: goats AR  Minimum volume between readings: 1 sample train volume (see formula below)  Minimum volume between readings: 1 sample train volume (see formula below)  Minimum volume between readings: 1 sample train volume (see formula below)  Remarks Blank (Include description of equipment cleaned e.g. dipper)  NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)  TRANSFER FINAL READINST TO STABILISATION FIELD SHEET  Time	Sampling e	quipment:		_			Water use:					
Site: goats							Animals obse	erved on	Chicke	ens / co	ws / shee	p / pigs /
Trip Blank NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)  TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET  Time Classed Time (1) (1) (*C) pH ((µS/cm) (my) (mg/L) (m)* Appearance*  Before		iple Codes:	AA	7 -			site:		goats	1	)/+	
Field Blank Rinsate Blank (Include description of equipment cleaned e.g., dipper)  NOTE: purge until well has stabilised using field parameters  TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET  Time Volume Removed Temp.  Time (I) (°C) pH (II) (my) (mg/L) (m) (my/L) (my/	Tolor Disort		AP	+13					ween read	lings: 1	. sample t	rain volume
Rinsate Blank (include description of equipment cleaned e.g. dipper)  NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)  TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET  Time Roword Temp. EC ORP Oxygen Level (NTU) Water Renowed Temp. PH. D. T.			731	2.0			(see formula	a below)				
description of equipment cleaned e.g. dipper) NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)  TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET  Time Elapsed Time (L) (°C) pH (((u.S/cm) (mV) (mg/L) (m)* Appearance†  Before			171	DH								
Cleaned e.g. dipper    NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)   TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET   Time			_At	3C								
NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)  TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET  Time Flapsed Time (L) Prop. (C) PH ((µS/cm) (mV) (mg/L) (m)* Appearance†  Before			nt				Vov Stabilisa	tion Cuito	wie.			
Delow (3 consecutive readings)	_		has stabilised	d using field p	arameters					itv ± 10	0% of prio	r reading and
Time   Time   Time   Removed   Temp.   EC   ORP   Oxygen   Cevel   (NTU) / Water   Appearance											•	0
Time				TDANCEED	UNIAL DEADL	NGC TO G		EIELD OLIE				
Time   Elapsed   Time   Removed   Temp.   EC   ORP   Oxygen   Level   (NTU) / Water Appearance*						NGS 10 SI	ABILISATION	LIELD SHE		hav	Water	Turbidity
Elapsed   Time   (L)   (°C)   pH   ((µS/cm)   (mV)   (mg/L)   (m)*   Appearance†		Time					EC	ORP				
During D		Elapsed		(L)					(mg,		(m)*	
During Du		_	5:08	~	14.5	7.02	917	93.4	1.7		-	4.71
During Du									-			
During D												
During Du										-		
During  Comments  Sample Train Volume Calculation (L) (length of sample tube x 3.141 x d² / 4000) + flow through cell volume. Where d = internal diameter of sample tube in mm  Water sample internal Ø = 6mm ≈ 30mL per meter  No contact lond on over Stream  Access to Stream restricted.  Analyses Required: PFAS suite  Serial number of water quality sensor unit: Shake test – foam produced?  Yes Letter given to landowner? Yes Location field sheet completed? Yes N/A  Well field sheet completed? Yes N/A							•					
During During During During During During During During  Comments										-		
During During During During  The CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy  The Clear of Sample tube x 3.141 x d² / 4000) + flow through cell volume.  Where d = internal diameter of sample tube in mm  Water sample internal Ø = 6mm ≈ 30mL per meter  Water sample internal Ø = 6mm ≈ 30mL per meter  The Concept bodge of Stream  The C												
During  During  † CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy  Comments  AAZ → Oup  Water sample internal diameter of sample tube in mm  Water sample internal ø = 6mm ≈ 30mL per meter  Num Concrete bridge Over Stream  Access to Stream restricted.  Analyses Required: PFAS suite  Serial number of water quality sensor unit:  Shake test—foam produced?  Yes  Letter given to landowner?  Yes  N/A  Well field sheet completed?  Yes  N/A  Well field sheet completed?  Yes  N/A												
Sample Train Volume Calculation (L) (length of sample tube x 3.141 x d² / 4000) + flow through cell volume. Where d = internal diameter of sample tube in mm  Water sample internal Ø = 6mm ≈ 30mL per meter    Now Concrete Indian Over Stream   Rich Sour Rich Microsoft in Stream												
(length of sample tube x 3.141 x d²/4000) + flow through cell volume.  Where d = internal diameter of sample tube in mm  Water sample internal Ø = 6mm ≈ 30mL per meter  NW Concrete order over Stream  Fish Wick Concrete or	During											
Water sample internal ø = 6mm ≈ 30mL per meter    Nw   Concrete   bridge   Over Stream		CO=cloudy, T	U=turbid, SI=	silty, SA=san	dy	(length o	of sample tub	e x 3.141 x	x d <sup>2</sup> / 4000			cell volume.
Analyses Required: PFAS suite  Serial number of water quality sensor unit:  Shake test – foam produced?  COC form completed and checked?  Yes  Letter given to landowner?  Yes  Location field sheet completed?  Yes  N/A  Well field sheet completed?  Yes  N/A	A A7	- 000	)						•			
Analyses Required: PFAS suite  Serial number of water quality sensor unit:  Shake test – foam produced?		Dup				valer so	ampie interna	11 φ – σιιιιι	i ≈ 30mc p	er meu	er	
Analyses Required: PFAS suite  Serial number of water quality sensor unit:  Shake test – foam produced?			N	IW CAN	acrede	bride	au aver	Street	an			
Analyses Required: PFAS suite  Serial number of water quality sensor unit:  Shake test – foam produced?					Grah	Son			gous ,	6	tream	٠.
Serial number of water quality sensor unit:  Shake test – foam produced?			A	ccess h	o str	am 1	estricted	d.			31.00	
Serial number of water quality sensor unit:  Shake test – foam produced?												
Shake test – foam produced?  COC form completed and checked?  Yes  Letter given to landowner?  Yes  Location field sheet completed?  Yes  N/A  Well field sheet completed?  Yes  N/A	Analyses Red	quired: PFAS	S suite									
COC form completed and checked? Yes Letter given to landowner? Yes  Location field sheet completed? Yes N/A Well field sheet completed? Yes N/A  Stabilisation criteria field sheet			· · · · · · · · · · · · · · · · · · ·									
Location field sheet completed?  Yes  N/A  Well field sheet completed?  Yes  N/A				<del></del>	<b>V</b> No							
Stabilisation criteria field sheet		•		=								
IVI YES				Yes	N/A	\ \	Well field shee	et complet	ted?	Yes		N/A
		criteria field	sheet	Yes								

<sup>\* =</sup> needs to be recorded each time you take a set of parameters

		NZDF	PFAS SAMP	LING FOR	M (sepa	rate form fo	r each p	rimary samp	ole)	
Location:	Ohake	ea ea				Job Number		A027	4412	5
Land owne	er:	-				Sample Code (Name):	е	Sw37		
Address:	To	ylor 1	Road			Date and tim	ne:	91412	y	
Weather:	U	7				Coordinates		E		
	File					(NZTM)				<del></del>
Sample no	int:	ton /	well Y surface		<del></del>	Sampled By:		N		(Cl
Sample po	1		well / surface	water		Sampled by.	-	Bayo		(Clean hands)
point:	n of sample	clo	w flow	ctream			-	Pap		(Dirty hands)
	f sample poi				_	au pl	-	П/ г	<b>-</b>	
from bore:				1)	m) 	Site Photos t	aken?	Yes	No	
Sampling e	Sampling equipment: M. July gripper					Water use:		Drinking v Fodder irriga	vater / Stock tion / Non-pc	
						Animals obse	erved on	Chickens	/ cows / shee	en / nigs /
QA/QA San Duplicate	QA/QA Sample Codes:  Duplicate					site:		goats		
Trip Blank						Minimum vo		ween reading	s: 1 sample t	rain volume
Field Blank			_							
Rinsate Bla	nk (include	-	_							
description	of equipme	nt								
cleaned e.g						Key Stabilisa				
	ge until well onsecutive r		d using field p	parameters				3%, turbidity r than 10 NTU		r reading and
Delon (5 cc	inscoutive i	caamgs				± 10 loi valui	es greate	i tilali 10 NTO		
			TRANSFER F	INAL READ	INGS TO S	TABILISATION	FIELD SHI	EET		
	Time		Volume	Water		50	000	Dissolved		Turbidity
	Time Elapsed	Time	Removed (L)	Temp. (°C)	рН	EC ((μS/cm)	ORP (mV)	Oxygen (mg/L)	Level (m)*	(NTU) / Water Appearance†
Before		2:53	(-/	15.6	6.72	581	-34.9	2.42	(111)	13 · 7 7 ·
During								6		75 . 7
During		_								
During										
During										
During										
During					-					
During										
During										
During During										
	L CO=cloudy, <sup>-</sup>	L 「U=turbid. SI:	L =silty, SA=san	l dv	Sample	Train Volume	Calculati	ion (L)		
		•	,,	,		of sample tube			flow through	cell volume.
Comments						d = internal dia		•		
					Water s	ample interna	l ø = 6mn	n ≈ 30mL per i	neter	
		chan	. 02	1/00 4	el					
		Sileon	n flow	70-	Slow					
Analyses Re	quired: PFA	S suite								
Serial numb	er of water o	quality senso								
Shake test –	•		Yes	√ No						
COC form co			Yes			Letter given to			25	
Location fiel		•	Yes	N/A	4	Well field shee	et comple	ted? Ye	es [	N/A
Stabilisation completed?	criteria fielo	a sneet	Yes							

<sup>\* =</sup> needs to be recorded each time you take a set of parameters

		NZDF I	PFAS SAMPI	LING FORI	<b>VI</b> (separ	ate form for	r each prir	mary sample	2)	
Location:	Ohake	ea			1	Job Number:	A	102744	12.4	
Land owne	r. <i>N7</i>	OF				Sample Code (Name):	N	W4		
Address:	On	- base	2			Date and tim	_		9/4/2	4
Weather:					_	Coordinates:	_			
	S	2000				(NZTM)				
Sample poi	nt:	tap/	well / surface	water		Sampled By:		Brun		(Clean hands)
Description								Verthan		(Dirty hands)
point:			4							
Distance of from bore:	sample poi	nt		(n	n)	Site Photos t	aken?	Yes 🗌	No	
		0	101.11.						ter / Stock v	
Sampling ed	quipment:	Test	sourse 1	pump	_	Water use:	F	odder irrigatio	on / Non-pot	able
			·			Animals obse	erved on		cows / sheep	o / pigs /
QA/QA Sam Duplicate	ple Codes:	AA	V			site:		goats	14	
		- A			_			een readings:	1 sample tr	ain volume
Trip Blank		AA	X			(see formula	below)			
Field Blank		AA	N		_					
Rinsate Blar		AA	Y							
description cleaned e.g.		TIL.				Key Stabilisa	tion Criteria	a:		
			d using field p	arameters		pH ± 0.1, EC :	± 3%, T ± 3%	%, turbidity ±	10% of prior	reading and
below (3 co	nsecutive r	eadings)				± 10 for value	es greater t	han 10 NTU		
			TRANSFER F	INAL READI	NGS TO ST	ABILISATION	FIELD SHEE	Т		
	Times		Volume	Water		F.C.	ODD	Dissolved	Water	Turbidity
	Time Elapsed	Time	Removed (L)	Temp. (°C)	рН	EC ((μS/cm)	ORP (mV)	Oxygen (mg/L)	Level (m)*	(NTU) / Water Appearance†
Before	0	10:27	all	18.2	6.49	560	-16.2	1.35	7.963	6.55
During	4	10:25	6.6	16.2	6.46	561	-21.5	0.53	7.970	10.08
During	7	10:28	1.2	16.2	6.44		-22.2		7.971	29.17
During During	14	10:31	2 14	16.1	6.44	659	- 24.1	0-28	7.972	105-07
During	17	10:38	3.0	16.2	646	559	-27. 2		7.973	22.6
During										
During										
During										
During During										
	CO=cloudy,	L TU=turbid, SI:	=silty, SA=san	l dy	Sample	L Train Volume	Calculation	n (L)		
C						•		$d^2 / 4000) + float$	_	cell volume.
Comments	dona	1						ample tube in × 30mL per me		
1	id off	fo Ma	- side			+ 250			ctei	
	40 we	11 open	and exp	posed		- 1	ts			
		•	,							
-										
Analyses Red	nuired: PFA	S suite								
·	•	quality senso	r unit:							
Shake test –			Yes	V No						
COC form co			Yes	<del></del>		etter given to			-	
Location field Stabilisation		•	Yes	✓ N/A	' '	Well field shee	et complete	d? Yes	L	N/A
completed?	cinena nei	u siicet	Yes	15000000						

<sup>\* =</sup> needs to be recorded each time you take a set of parameters

		NZDF F	PFAS SAMPL	ING FORM	<b>√I</b> (separa	ate form for	each prin	nary sample	:)			
Location: Ohakea					ī	Job Number: AD2744124			124			
Land owner	r: 107	ZDF				Sample Code (Name):	N	1W6				
Address: On beise						Date and time: 11:36 9/4/24						
Weather:						Coordinates:	E					
	Lin					(NZTM)	-					
Sample noi	Fine					Sampled By:	N	Rayo		(Clean hands)		
Sample point: tap (well) surface water				oumpieu by.	Veiheur (Dirty							
Description of sample point:			_					J 0011 000 C		(Birty Harras)		
Distance of sample point						Site Photos t	Site Photos taken? Yes No					
from bore:			(m)			Drinking water / Stock wa  Water use: Fodder irrigation / Non-potal						
Sampling equipment:			eristaltie Pump									
					Animals observed on Chickens / cows / sheep /				o/pigs/			
	QA/QA Sample Codes:						site: goats			174		
Duplicate			_			B.41:1:	leens a la atreca		1	- Constant Constant		
Trip Blank			-			Minimum vo (see formula		een readings:	1 sample tra	ain volume		
Field Blank		-	_		_	(	,					
Rinsate Blar	ok (include	-			_							
description		nt			_							
cleaned e.g.	cleaned e.g. dipper)						Key Stabilisation Criteria:					
	NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)						pH ± 0.1, EC ± 3%, T ± 3%, turbidity ± 10% of prior reading and ± 10 for values greater than 10 NTU					
pelow (3 co	nsecutive re	eadings)				± 10 for value	es greater ti	nan 10 NIU				
			TRANSFER F	INAL READI	NGS TO ST	TABILISATION	FIELD SHEET	Γ				
			Volume	Water				Dissolved	Water	Turbidity		
	Time	Time	Removed	Temp. (°C)	nU	EC ((μS/cm)	ORP (mV)	Oxygen	Level	(NTU) / Water Appearance†		
Before	Elapsed	Time 11:19	(L)	19.9	6-23		92.7	(mg/L)	(m)*	4.94		
During	5	11:24	0.4	19.8	6.02	187. W	119.2	3.27	3.640	5.15		
During	10	11:29	0.8	19.7	5.97	184.1	132.1	3.10	3.645	5.08		
During	14	11:33	1.2	19.5	5.95	182.5	140.3	2,99	3.650	4.80		
During	19	11:38	1.6	19.3	5.94	181.7	147.9	2.93	3.660	4.28		
During	23	11:42	2.0	19.0	5.94	181.4	185.8	2.93	3.674	4.16		
During	27	11:46	2.4	19.0	5.93	181.0	163.2	2.91	3.680	4.00		
During	31	11:251	2.8	19.0	5.93	181.1	170.3	2.91	3.690	4.81		
During												
During												
During t Classica C	O-aloudu -	Til_turbid Cl	-ciltu CA-con	du	Comple	Tuoin Valuma	Coloulation	(1)				
(1)					(length o	Sample Train Volume Calculation (L)  length of sample tube x 3.141 x d² / 4000) + flow through cell volume.  Where d = internal diameter of sample tube in mm						
						ample interna						
4.46 x 30 + 280 = 0.41												
Analyses Required: PFAS suite												
Serial number of water quality sensor unit:  Shake test – foam produced?  No												
COC form completed and checked? Yes Letter given to landowner? Yes												
Location field sheet completed?  I Yes N/A						Well field sheet completed? Yes N/A						
Stabilisation criteria field sheet												
completed?			Yes									

<sup>\* =</sup> needs to be recorded each time you take a set of parameters

		NZDF I	PFAS SAMP	LING FOR	<b>VI</b> (separ	ate form fo	r each pri	mary sample	e)			
								_				
Location: Ohakea					1	Job Number		402741	1128			
Land owne	land owner: NZDE						Sample Code (Name):					
Address:							ne: 1	2:149	9/4/	24		
Weather:		1 10000			_		-		11 - 17			
	C					Coordinates (NZTM)	:	E				
A	hne							N				
Sample point: tap (well) / surface water					Sampled By: (Clean h							
Description of sample					_	B.7-		(Dirty hands)				
point:	sample poi											
Distance of sample point from bore:		THC .	- (m			Site Photos taken? Yes No						
		0	0.111.0.			Drinking water / Stock watering /						
Sampling e	Sampling equipment: Peristanc Pump				Water use:	F	odder irrigatio	on / Non-po	table			
				'		Animals obse	anuad an	Chickons /	sous / shoo	n / nigs /		
QA/QA Sam	QA/QA Sample Codes:						Animals observed on Chickens / cows / sheep / pigs / goats					
Duplicate			^					Bouts				
						Minimum vo	lume betw	veen readings:	1 sample t	rain volume		
Trip Blank						(see formula below)						
Field Blank												
Rinsate Blan												
description		ent										
cleaned e.g		has stabilies	al			Key Stabilisation Criteria:						
	NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)						pH $\pm$ 0.1, EC $\pm$ 3%, T $\pm$ 3%, turbidity $\pm$ 10% of prior reading and $\pm$ 10 for values greater than 10 NTU					
							ao B. cate.	20 1110				
		-	TRANSFER F	INAL READI	NGS TO ST	<b>FABILISATION</b>	FIELD SHE	EŢ				
	Time		Volume	Water		F.C.	000	Dissolved	Water	Turbidity		
	Time Elapsed	Time	Removed (L)	Temp. (°C)	pН	EC ((μS/cm)	ORP (mV)	Oxygen (mg/L)	Level (m)*	(NTU) / Water Appearance†		
Before	O	12:31	611	18-3	5.89	321.8	61.6	2.12	2.06	12:56		
During	4	12:35	0.4		5.77	315.4	102.4	0.63	2.11	8:46		
During	8	12:39	0.8	18. 2	5.75	306.2	123.5		2.18	10.62		
During	11	12:42	1.7	18.3	5.79	306.8	76.2	0.54	2.22	10.44		
During	15	12:46	1.6	18.2	5.83	306 B 313 2	47.9	0.30	2.27	13.71		
During	19	12:50	2.0	18.61	5.85	320.0	28.9	D.27	2.31	9.94		
During				4	b							
During				Su	7 0							
During					GW.							
During												
During												
† CL=clear, C	CO=cloudy,	TU=turbid, SI	silty, SA=san	dy		Train Volume						
								$d^2 / 4000) + fl$		cell volume.		
						Where d = internal diameter of sample tube in mm						
Joby G						Water sample internal $\emptyset = 6 \text{mm} \approx 30 \text{mL per meter}$ $30 \times 4.42 + 250 = 0.41$						
110/1		cincol.	1		50 X	4.42+	250 -	0.46				
well at	using	crushe	ana									
int No phones some surrounding site developed												
		- 100	phone	.5	Sur	5 3011	andi	7 5016	auge	opcol		
Analyses Red	nuired: PFA	S suite										
Analyses Required: PFAS suite Serial number of water quality sensor unit:												
Shake test – foam produced? Yes No												
COC form completed and checked? Yes Letter given to landowner? Yes												
Location field sheet completed?  Yes  N/A  Well field sheet completed?  Yes  N/A									□ N/A			
Chalifesting gritaria field sheet												
completed?			Yes									

<sup>\* =</sup> needs to be recorded each time you take a set of parameters

		NZDF F	PFAS SAMPI	ING FORI	<b>VI</b> (separ	ate form for	r each prin	nary sample	e)	
Location:	_ Ohake	ea			1 .	Job Number: Sample Code	1,0	in/6	1027	44124
Land owne Address:	er:		0 0 0	4		(Name): Date and tim		GWE	U	
Weather:	eq.	to Jun	one k	0091			_	0/4/2		
	C	1221				Coordinates: (NZTM)	-			
Sample poi	int:	tap	well surface	water		Sampled By:	_N	Natho	_	(Clean hands)
	of sample	_tap(	weir/ surface	water		sumpled by:	-	Ra	^	(Dirty hands)
point:		Ope	n ve	u				D. O.		
Distance of from bore:	sample poi	nt		(n	n)	Site Photos t	aken?	Yes 🔲	No	
nom bore.		0	1/1	0	_			Drinking wa	ter / Stock v	watering /
Sampling e	quipment:	Per	stalac	Pump		Water use:	Fo	odder irrigatio	n / Non-pot	table
						Animals obse	erved on	Chickens / o	cows / shee	p/pigs/
	nple Codes:					site:		goats	NA	
Duplicate			-			Minimum	السم المعاليا		1	
Trip Blank			-			(see formula		een readings:	1 sample tr	ain volume
Field Blank			_							
Rinsate Bla	nk (include	-								
description	of equipme	nt			_					
cleaned e.g		has stabilise	d using field p	aramotors		Key Stabilisa pH ± 0.1, EC :			100/ of prior	r rooding and
	onsecutive r		u using nelu p	arameters		± 10 for value			to% or prior	reading and
			Volume	Water	NGS TO S	TABILISATION	FIELD SHEET	Dissolved	Water	Turbidity
	Time		Removed	Temp.		EC	ORP	Oxygen	Level	(NTU) / Water
	Elapsed	Time	(L)	(°C)	pH	((μS/cm)	(mV)	(mg/L)	(m)*	Appearance†
Before	6	10:13	(ell	17.9	6.9	578	9.6	3.19	5.84	12.90
During During	10	10:23	ON 2	15.6	6.78	564	-109.2	0.49	5.84	17.87 28.95
During	14	10:27	M2 3	15.9	6.79	864	-1818.		5.54	42.25
During	19	10:32	4	75.8	6.79		-148.4	0.24	5.84	56.57
During	21	10:34	5	15.9	6.79	865	- 157.1	22.0	5.84	85.37
During										
During During										
During										
During										
† CL=clear,	CO=cloudy,	ΓU=turbid, SI=	silty, SA=san	dy		Train Volume				
Comments						of sample tub d = internal dia				cell volume.
Blackish	layer	on dop a	of a			ample interna		-		
Reclish	(tadnin	) layer	- in jus	7	6.3	X30+	250 =	430 =	14.0	
		0	100	i wo	iter,	lots a	of 100	ives.		
		a sulfi	ur sme	1		OT	2 (	74.		
in ater	hae .		N OIVE	W			. d	71	•	
Water	has c	2 2010								
Marcs Analyses Re										
Analyses Re Serial numb	quired: PFA er of water o	S suite quality senso								
Analyses Re Serial numb Shake test –	quired: PFA er of water of foam produ	S suite quality senso uced?	Yes	No						
Analyses Re Serial numb Shake test – COC form co	quired: PFA er of water of foam produ ompleted an	S suite quality senso iced? d checked?	Yes Yes	,		Letter given to			Г	□ N/A
Analyses Re Serial numb Shake test –	quired: PFA er of water of foam produ ompleted an ld sheet com	S suite quality sensor iced? d checked? ipleted?	Yes	No No		Letter given to Well field shee		_=		N/A

<sup>\* =</sup> needs to be recorded each time you take a set of parameters

		NZDF P	FAS SAMPI	LING FOR	M (sepai	rate form for	each prir	nary sample		
Location:	Ohake	a			1	Job Number: Sample Code		9027 441	25	
Land owne	r:	7 1	0			(Name):		MSI		
Address: Weather:	oct	Baily	Road			Date and tim	ie: K	14129		
weather.		Simm	- ( 1)00	Ala.		Coordinates: (NZTM)	E			
Sample poi	nt:	tap	vell / surface	water		Sampled By:		Ross		(Clean hands)
Description			•					Jathan		(Dirty hands)
point:		-								
Distance of from bore:	sample poir	nt _		(r	m)	Site Photos t	aken?	Yes 🖊	No	
Sampling e	quipment:	Tro	sfer b	offle		Water use:	F	Drinking wat odder irrigation		
						Animals obse	erved on	Chickens / d	ows) shee	p / pigs /
QA/QA Sam	nple Codes:					site:		goats		
Duplicate						nation to a constant	l l <b>k</b>		4	
Trip Blank		-				(see formula		een readings:	I sample tr	ain volume
Field Blank										
Rinsate Blar	nk (include	-								
description	of equipme	nt								
cleaned e.g						Key Stabilisa				
	e until well Insecutive re		d using field p	oarameters		pH ± 0.1, EC : ± 10 for value		6, turbidity ± 1 han 10 NTU	0% of prior	reading and
Below (5 co	insecutive re	zaamgs/				2 10 101 1414	es greater t	11011 10 1410		
				INAL READI	INGS TO S	TABILISATION	FIELD SHEE	1		
	Time		Volume Removed	Water		EC	ORP	Dissolved	Water	Turbidity
	Elapsed	Time	(L)	Temp. (°C)	рН	((μS/cm)	(mV)	Oxygen (mg/L)	Level (m)*	(NTU) / Water Appearance†
Before	-	11.00	_	15.4	6.91	431-8	76.2		_	1575-30
During										
During										
During										
During										
During										
During										
During										
During During										
During										
	CO=cloudy, T	ΓU=turbid, SI=	silty, SA=san	dy	Sample	Train Volume	Calculation	n (L)		
								d <sup>2</sup> / 4000) + flo		cell volume.
Comments			,					ample tube in i 30mL per me		
					vaters	sample interna	1 W – OIIIII -	Some per me	tei	
		Ship	d doo	- Fixe	d					
			DU	raid	for	2 mine	tes L	efore se	implir	9
				J						
Analyses Re										
		quality sensor		NI-						
Shake test -	•		Yes	No		Latter -!	land-	T v		
COC form co			Yes	N/		Letter given to			Г	□ N/A
Location fiel Stabilisation					•	Well field shee	eccomplete	ed? Yes	L	
completed?			Yes							

<sup>\* =</sup> needs to be recorded each time you take a set of parameters

		NZDF	PFAS SAMP	LING FOR	<b>M</b> (separ	ate form fo	r each p	rimary san	nple)	
Location:	Ohake	ea			1	Job Number Sample Code		A027	1412	-
Land owner	er:					(Name):	e	WSZ		
Address:	Rm	D hou	scinqu	Jam		Date and tin	ne:	8:02	10/4	+ 124
Weather:		T	V			Coordinates		E	, - ,	
						(NZTM)	•			
		2000	" / "					N		
Sample po		(tap/	well / surface	water		Sampled By:		Neith	cun	(Clean hands)
	n of sample							Bryn		(Dirty hands)
point:	f sample poir	nt							_	
from bore:		_		(r	n)	Site Photos t	aken?	Yes	<b>V</b> No	
Sampling e	quipment:	Ta	ρ			Water use:			g water / Sto gation / Non-	ock watering / -potable
		•	,			Animals obse	arved on	Chicker	ns / cows / sl	heep / pigs /
QA/QA Sar	mple Codes:					site:	erveu on	goats	NA SI	leeb / bigs /
Duplicate			_					0		
								tween readi	ngs: 1 sampl	le train volume
Trip Blank		-			_	(see formula	below)			
Field Blank										
Rinsate Bla			-							
description cleaned e.g	of equipme	nt								
		has stahilise	d using field p	narameters		Key Stabilisa			v + 10% of n	orior reading and
	onsecutive re		a asing near	Jarameters		± 10 for valu				mor reading and
				1	NGS TO S	TABILISATION	FIELD SH			
	Time		Volume Removed	Water Temp.		EC	ORP	Dissolv Oxyge		,
	Elapsed	Time	(L)	(°C)	pН	((μS/cm)	(mV)	(mg/l		
Before	-	7:42	- "	14.6	654	499.6	33.1	4.72	0 -	
During									,	
During										
During										
During										
During										
During										
During										
During										
During										
During	CO-slaudu 3	ال الماسية الما	 =silty, SA=san	٠,٠	Committee	Tuelle Mellere	6-11-1	• (1)		
r CL-Clear,	CO-cloudy, 1	o-turbia, si	-siity, sa=san	uy		Train Volume of sample tub			+ flow throu	ugh cell volume.
Comments						d = internal di				Agir cell volume.
Jop n	un for	due m	inutes		Water s	ample interna	ıl ø = 6mr	n ≈ 30mL pe	r meter	
U					, ,	1	0	,		
			1308	dip	h to	bas 1	of l	sore		
			cut of	e at	11.	(bore +	une	doff)		
			1 /	- • /		,	,	11		
		<u> </u>	bun	dis	conti	nua	17	May.		
	quired: PFA			/					910	
	er of water of		r unit:	No				DIW	7.65	
	foam produ		Yes	INO INO			. 1 1			
	ompleted an		Yes	□ NI//		Letter given to			Yes	
	ld sheet com r criteria field		/	N/A	`	Well field shee	et comple	eted?	Yes	N/A
completed?		SHEEL	Yes							

<sup>\* =</sup> needs to be recorded each time you take a set of parameters

		NZDF I	PFAS SAMP	LING FORI	M (separ	ate form for	r each pr	imary sample	e)	
Location:	Ohake	ea .			1	Job Number: Sample Code	4	in # 3	31	
Land owne	r:	_				(Name):	2	A02744	1245	
Address:	Soc	edy R	oad.			Date and tim	ne:	1014/22		
Weather:		1				Coordinates:		E		
	(	7				(NZTM)	_			-
Sample poi	nt.	tan	well / surface	water		Sampled By:	_	N		(Clean hands)
Description		tup	Well / Surface	water			_	Basa		(Dirty hands)
point:	i oi sample						_	13043		(=)
	sample poi	nt		(r	m)	Site Photos t	aken?	Yes 🗆	No	-
from bore:								Drinking wa		watering /
Sampling e	quipment:	Pur	~p :~	tank		Water use:		Fodder irrigation		
QA/QA San	nple Codes:					Animals obsessite:	erved on		cows/shee	
Duplicate			-							
Trip Blank			-			Minimum vo (see formula		ween readings:	1 sample to	rain volume
Field Blank		-	_			(see formula	below			
	- l. /:ll.	-								
Rinsate Blai description	nk (include of equipme	nt			<del></del> -					
cleaned e.g						Key Stabilisa	tion Crite	ria:		
			d using field p	parameters				3%, turbidity ±	10% of prio	r reading and
below (3 co	nsecutive r	eadings)				± 10 for value	es greater	than 10 NTU		
			TRANSFER F	INAL READI	NGS TO S	TABILISATION	FIELD SHE	ET		
			Volume	Water				Dissolved	Water	Turbidity
	Time Elapsed	Time	Removed (L)	Temp.	pН	EC ((μS/cm)	ORP (mV)	Oxygen (mg/L)	Level (m)*	(NTU) / Water Appearance†
Before	Liapsea	910	(-)	17.4	6.32		-3.9	2.14	(111)	2.71
During					- 50	.,,,				
During										
During										
During										
During										
During										
During										
During During										
During										
	CO=cloudy, <sup>-</sup>	TU=turbid, SI:	=silty, SA=san	dy		Train Volume				
Commonto								k d <sup>2</sup> / 4000) + flo sample tube in		cell volume.
Comments								sample tube in ≈ 30mL per me		
					vater 3	ample interna	11 y - 011111	~ Some per me	- CI	
		New	Bow (	hed			V	imp 52	ng 90	ne
				pump	feed	ds into	wa	ter ton	£. /	
				1 1				•		
Analyses Re										
Shake test –		quality senso	r unit: Yes	No No						
COC form co			Yes			Letter given to	landown	er? Yes		
Location fiel			Yes	N/A		Well field shee			Г	N/A
Stabilisation completed?		•	Yes			The state of the				
•				-						

<sup>\*</sup> = needs to be recorded each time you take a set of parameters

		NZDF	PFAS SAMP	LING FORI	M (sepai	rate form fo	r each pri	imary sam	ıple)	
Location:	_ Ohake	a			1	Job Number Sample Code	e		190274	4126
Land owne	er:	-				(Name):		GWS.	3	
Address:	Acc	es of	proper	y by S	H1	Date and tin	ne: _	8:38	10/41	24
Weather:	_					Coordinates	:	E		
	Cin	0				(NZTM)	_	NI		
Sample poi	int:	fan (	well / surface	water		Sampled By:	-	Roma		(Clean hands)
	n of sample	tup	well / Sarrace	Water			_	Nat	ca	(Dirty hands)
point:	i oi sample						_	10-11		(Direy Harras)
	f sample poir	nt		In	m)	Site Photos t		Yes	No	-
from bore:			_	(I	m) ——	Site Photos t	akenr L	_		
Sampling e	quipment:	Tay	P		_	Water use:			water / Stock ation / Non-po	
						Animals obse	erved on	Chicken	s (cows/shee	ep / pigs /
	nple Codes:					site:				
Duplicate										
Trip Blank			_			Minimum vo (see formula		ween readii	ngs: 1 sample t	rain volume
Field Blank		-			_	(See Torritala	belowy			
		-								
Rinsate Bla	nk (include of equipmer				-					
cleaned e.g		10				Key Stabilisa	tion Criter	ia:		
NOTE: purg	ge until well	has stabilise	d using field p	arameters					y ± 10% of pric	or reading and
below (3 co	onsecutive re	eadings)				± 10 for valu	es greater	than 10 NT	U	
			TDANCEED	INIAL DEADI	NCC TO C	TARILICATION	FIELD CHE	ET		
			Volume	Water	103 10 3	TABILISATION	LIELD SHE	Dissolv	ed Water	Turbidity
	Time		Removed	Temp.		EC	ORP	Oxyge		(NTU) / Water
	Elapsed	Time	(L)	(°C)	рН	((μS/cm)	(mV)	(mg/L		Appearance†
Before		8:35		13.4	6.58	716	-27.9	1.83	r	167.48
During										
During										
During During										
During										
During										
During										
During										
During										
During										
† CL=clear,	CO=cloudy, T	U=turbid, SI	=silty, SA=san	dy		Train Volume			. ()	
Comments						of sample tub d = internal di			+ flow through	i cell volume.
						sample interna		-		
				A.	tesia					
	quired: PFAS									
	er of water o - foam produ		r unit:	▼ No						
	ompleted and		Yes	140		Latter given to	a landous	or2	Vos	
	Id sheet com		Yes	N/A		Letter given to Well field shee			Yes Yes	□ N/A
	criteria field					.ven neid snet	er complet	.cu:	103	
completed?			✓ Yes							

<sup>\* =</sup> needs to be recorded each time you take a set of parameters

		NZDF	PFAS SAMP	LING FORI	<b>VI</b> (separ	ate form for	r each p	orimary sam	ple)	
Location:	Ohake	ea				Job Number:	:	AOZAL	14125	
	-					Sample Code				
Land owne		*****				(Name):		GW65		. 71
Address: Weather:	Sold	iers y	oad			Date and tim	ne:	10:4	11/4	124
Weather.						Coordinates:		E		
						(NZTM)		N		
Sample po	int:	(tap/	well / surface	water		Sampled By:		Natho	n	(Clean hands)
Description	n of sample		1	1.				Bry	n	(Dirty hands)
point:		tron	n yarar to	ank.						
from bore:	f sample poi	nt		(n	n)	Site Photos t	aken?	Yes	No	
moni bore.		-						Drinking	water / Stock	watering/
Sampling e	quipment:	_7	ap			Water use:			ation / Non-po	
						A !		Cl. I	, , ,	
OA/OA Sar	nple Codes:					Animals obsesite:	erved on	Chickens	s / cows / shee	ep / pigs /
Duplicate						Jite.		Boars	70.1	
		-						etween readin	gs: 1 sample t	train volume
Trip Blank		-				(see formula	below)			
Field Blank										
Rinsate Bla			~							
	of equipme	nt								
cleaned e.g		has stahilisa	d using field p	narameters		Key Stabilisa			+ 10% of pric	or reading and
	onsecutive r		u using neiu į	Jarameters				er than 10 NT		or reading and
	1				NGS TO ST	ABILISATION	FIELD SH			
	Time		Volume Removed	Water Temp.		EC	ORP	Dissolve Oxyger		Turbidity (NTU) / Water
	Elapsed	Time	(L)	(°C)	рН	((μS/cm)	(mV)	,0		Appearance†
Before	_	9:55	_	14. 2	7.17	984	-83.	3 3.30	5 -	3186.8
During										
During										
During										
During										
During										
During During										
During										
During										
During										
† CL=clear,	CO=cloudy,	TU=turbid, SI	=silty, SA=san	dy		Train Volume				
Cammanta								$1 \times d^2 / 4000$ ) -		n cell volume.
Comments								of sample tube m ≈ 30mL per		
					water so	imple interna	1 Ø – OIII	III ~ Sollic per	meter	
Analyses Re										
		quality senso		Total No						
Shake test -	•		Yes Yes	✓ No		-11	1 1		,	
COC form co	-		Yes	N/A		etter given to			'es	□ N/A
Location fie Stabilisation				19/2	. '	Vell field shee	et compl	eced? []	'es	□ N/A
completed?			✓ Yes							

<sup>\* =</sup> needs to be recorded each time you take a set of parameters

NZD	F PFAS SAMP	LING FORI	<b>M</b> (separ	ate form fo	r each p	rimary sample	)	
Location: Ohakea			1	Job Number Sample Code (Name):		402744 GW67	125	
Address: Ooo bask				Date and tin	ne:	9:36	11/41	7 CL
Weather:			_		-		10047	4
				Coordinates (NZTM)	: _	Е		
						N		
Sample point: tag	well / surface	e water		Sampled By:	_	/		(Clean hands)
Description of sample					_			(Dirty hands)
	mwell				_			
Distance of sample point from bore:	_	(n	n)	Site Photos t	aken?	Yes	No	
			_			Drinking wat	ter / Stock v	vatering /
Sampling equipment:	ri bruk	2	_	Water use:		Fodder irrigatio		
QA/QA Sample Codes:				Animals obsessite:	erved on	Chickens / c		
Duplicate			_	0.411				
Trip Blank				(see formula		ween readings:	1 sample tr	ain volume
Field Blank			_	(occ rorman	. 20.011			
-								
Rinsate Blank (include description of equipment	_							
cleaned e.g. dipper)				Key Stabilisa	tion Crite	ria:		
NOTE: purge until well has stabil	ised using field	parameters				3%, turbidity ± 1	.0% of prior	reading and
below (3 consecutive readings)				± 10 for valu	es greate	r than 10 NTU		
	TDANCEED	CINIAL DEADL	NCC TO C	TABILISATION	EIELD CIT	FFF		
	Volume	Water	103 103	ABILISATION	FIELD SHI	Dissolved	Water	Turbidity
Time	Removed	Temp.	13.	EC	ORP	Oxygen	Level	(NTU) / Water
Elapsed Time	(L)	(°C)	рН	((μS/cm)	(mV)	(mg/L)	(m)*	Appearance†
Before	, ,		0					
During Well In All	,	es inte	rme	day	own	er flat	1515	no
During /or	sen ko	U8C1		,				
During								
During								
During								
During		-						
During								
During								
During During								
† CL=clear, CO=cloudy, TU=turbid,	SI=silty, SA=san	_L	Sample	 Train Volume	   Calculati	ion (I.)		
	5. 5t,, 5 5a.	,				x d <sup>2</sup> / 4000) + flo	w through	cell volume.
Comments			Where o	d = internal di	ameter of	sample tube in i	mm	
Dry well	· ite.		Water s	ample interna	ıl ø = 6mm	n ≈ 30mL per me	ter	. 4.
			0.07					
		DTB	2.96	•			7	
Analyses Deguired, DEAS auto								
Analyses Required: PFAS suite	sorunitu							
Serial number of water quality ser Shake test – foam produced?	Yes	П No						
COC form completed and checked	=			atter given to	landous	ner? Yes		
Location field sheet completed?	Yes	□ N/A		Letter given to Well field shee			Г	□ N/A
Stabilisation criteria field sheet		14/7		vven neid snee	er comple	ted? Yes		
completed?	Yes							

<sup>\* =</sup> needs to be recorded each time you take a set of parameters

		NZDF F	PFAS SAMP	LING FORI	<b>VI</b> (separ	ate form fo	r each prir	nary sample	e)	
Location:	_ Ohake	ea				Job Number Sample Code	: <u>L</u>	02744	1126	
Land owne	r:	_				(Name):	e (	EGWIC	06	
Address:	Ta	1600 F	Road			Date and tin		2:21		24
Weather:						Coordinates	: E			
						(NZTM)	 N			
Sample poi	nt:	_ tap /	well / surface	water		Sampled By:	- E	Bryn		(Clean hands)
Description	of sample						_/	Vallan		(Dirty hands)
point: Distance of	sample poi			,	_	a		7 🖂		
from bore:				(n	1) —	Site Photos t	taken?		No	
Sampling e	quipment:	Peri	staltic	Pamp		Water use:	Fo	Drinking wa odder irrigatio		
			/			Animals obse	erved on	Chickens /	cows / shee	o / pigs /
QA/QA Sam Duplicate	iple Codes:		-			site:		goats	UA	
		-						een readings:	1 sample tr	ain volume
Trip Blank					_	(see formula	below)			
Field Blank	1. (: - 1 - 1 -				_					
Rinsate Blar description	•	nt	<u>ر</u>		_					
cleaned e.g.						Key Stabilisa				
NOTE: purg below (3 co		has stabilised eadings)	d using field p	arameters		pH ± 0.1, EC : ± 10 for valu		%, turbidity ± : han 10 NTU	10% of prior	reading and
			2							
			TRANSFER F	Water	NGS TO ST T	ABILISATION	FIELD SHEE	Dissolved	Water	Turbidity
	Time		Removed	Temp.		EC	ORP	Oxygen	Level	(NTU) / Water
	Elapsed	Time	(L)	(°C)	рН	((μS/cm)	(mV)	(mg/L)	(m)*	Appearance†
Before	0	2:01	64	17.0	6.16	- 0	107.1	1.64	2.88	20.54
During	2	2:03	0.5	16.7	6.11	684	111-6	0.70	2.58	17.71
During	4	2:05	1	16.7	6.08		117.2	0.47	2.88	12.51
During	6	2:07	1.5	16.7	6.04	681	121.8	0.37	2.58	20.59
During	8	2:09	2.0	16.8	6.03	678	124.2	0.32	2.88	31.38
During	0)	2:11	2.5	16.8	6.03		126-3	0.29	2.58	46.85
During	12	2:12	3.0	16.8	6.04	673	127.0	0.27	2.58	8.5
During During										
During										
During										
	CO=cloudy,	L ΓU=turbid, SI=	silty, SA=san	l dy	Sample	l Train Volume	   Calculation	l n (L)		
Comments								d <sup>2</sup> / 4000) + flo ample tube in		cell volume.
Comments								: 30mL per me		
					Water se	ample interne	0.5		2001	
					- NAM	of the				
					DVD	8				
		Co	old no	fact.	esper (	d for	of Do	1 On	e Stro	wm.
Analyses Red	quired: PFA			-	110	'open	to as	o Surta	De, Car	ster inflan
		quality sensor	unit:	,	,,		, , , , ,	7 5-114		
Shake test –	foam produ	iced?	Yes	<b>V</b> No						
COC form co	mpleted an	d checked?	✓ Yes			etter given to	landowner	? Yes		
Location field		•	Yes	□ N/A	\	Well field shee	et complete	d? Yes		N/A
Stabilisation completed?	criteria fielo	d sheet	Yes							

<sup>\*</sup> = needs to be recorded each time you take a set of parameters

		NZDF F	PFAS SAMPI	LING FORI	<b>VI</b> (separ	ate form fo	r each prir	nary sample	)	
								an Tuy	1128	
Location:	_ Ohake	ea			1	Job Number Sample Code		302.744	. 25	
Land owne	r:					(Name):	(-	5W10	7	
Address:	Tax	reimog	ing Re	send		Date and tim	ne:	8:34	11/4/	124
Weather:						Coordinates	. E			
	9		L			(NZTM)	-			-
Sample poi	nt·	tap /	well / surface	water	_	Sampled By:	_N	Nathan		(Clean hands)
Description		_ tup /	well y surface	water	-	,		Brin		(Dirty hands)
point:	or sample		_				_			(= = )
	sample poi	nt		(n	n)	Site Photos t	aken? [	Yes 🗸	No	
from bore:		-		(11		Site i notos t	aken: _			
Sampling e	quipment:	Par	skelly	Punc		Water use:	F	Drinking wa odder irrigatio		
Sampling C	quipinenti	1001	oraco/C	- Just	_	water use.		Judel III Butio	ii / ivoii pot	dbie
						Animals obse	erved on	Chickens / c		o/pigs/
QA/QA Sam	iple Codes:					site:		goats	UA	
Duplicate					-	Minimum vo	luma hatw	een readings:	1 sample tr	ain volume
Trip Blank						(see formula		cen readings.	1 sample ti	anii voiume
Field Blank			-		_					
Rinsate Blar	nk (include		_		_					
description	•	nt			_					
cleaned e.g						Key Stabilisa				
			d using field p	arameters				6, turbidity ± 1	.0% of prior	reading and
below (3 co	insecutive r	eadings)				± 10 for valu	es greater t	nan 10 NTO		
			TRANSFER F	INAL READI	NGS TO ST	TABILISATION	FIELD SHEE	Т		
			Volume	Water				Dissolved	Water	Turbidity
	Time Elapsed	Time	Removed (L)	Temp. (°C)	pН	EC ((μS/cm)	ORP (mV)	Oxygen (mg/L)	Level (m)*	(NTU) / Water Appearance†
Before	O	8:18	(1)	16.3	7.65	349.1	36.6	4.00	3.17	11.57
During	2	8:20	0.5	15.4	681	235.2	-43.3	0.75	3.17	14.26
During	4	8:24	1.0	15.3	6.67	248.0	-54.2	0.63	3.17	12.31
During	5	8:23	1.5	15.2	6.67	864.7	-60.6	0.52	3.17	9-38
During	7	8:25	2.0	15.2	6.81	610	-72.7	0.45	3.17	10.86
During	9	8:27	2.5	15.1	6.84	616	-77.8	0.40	317	12.60
During	11	8:29	3.0	15.1	6.86	619	-86.0	0.37	3.17	17.10
During	17	8:32	5.0	15.1	6.88	621	-86.0	0.33	3.17	23.30
During	, (	5,33	5.0	19.1	6.89	624	- 88.8	6.30	3.17	33.76
During During										
0	CO=cloudy,	L TU=turbid, SI:	=silty, SA=san	dy	Sample	L Train Volume	Calculation	լ ո (L)		
								$d^2 / 4000) + flo$		cell volume.
Comments		1 11	1.					ample tube in		
Yellow	colou	r 10 Mu	water	,		ample interna		30mL per me	ter	
					613	1200-	400 -	0.50		
Analyses Re	quired: PFA	S suite								
		quality senso		<del></del>						
Shake test –	•		Yes	/ No						
COC form co			Yes	NI/A		etter given to			Г	¬ №/^
Location fiel Stabilisation		•	Yes	N/A	, ,	Well field shee	et complete	d? Yes	L	N/A
completed?	criteria neli	a SHEEL	Yes							
				_						

<sup>\* =</sup> needs to be recorded each time you take a set of parameters

		NZDF F	PFAS SAMP	LING FORM	<b>∕I</b> (separ	ate form fo	r each prin	nary sample	e)	
Location:	Ohake	ea			1	Job Number Sample Code (Name):	: <u>A</u>	0274413 GW108		
Address:	Tai	ylor R	Road			Date and tim	ne:	3:16	9/4	124
Weather:		^	.*,		_	Coordinates	. E			,
	1	ine				(NZTM)	_			
Sample point	t·		vell / surface	water	-	Sampled By:	N	Jathon		(Clean hands)
Description of		tap/	ven / surface	water		oumpieu by		il and		(Dirty hands)
point:	or sample						_	py		(Birty Harida)
Distance of s	ample poir	nt		(m	<u> </u>	Site Photos t	aken?	Yes 🚺	No	-
from bore:			1	0 (11	<del></del>	Site i notos t	dicit:			
Sampling equ	uipment:	Per	istal Ne	Pump	_	Water use:	Fo	Drinking wa odder irrigatio		
				,		Animals obse	erved on	Chickens / c		p / pigs /
QA/QA Samp	ole Codes:		_			site:		goats	MA	
Duplicate		-			_	Minimum vo	lumo hotur	on roadings.	1	
Trip Blank			_			(see formula		een readings:	1 sample tr	ain volume
Field Blank			-			•				
Rinsate Blank	c (include		_		_					
description o	f equipme	nt			_				1	
cleaned e.g. o						Key Stabilisa				
NOTE: purge below (3 con			d using field p	arameters		pH ± 0.1, EC : ± 10 for value		, turbidity ± 1	LO% of prior	reading and
Delow (5 con	Securive re	zadings)				± 10 loi value	es greater ti	Idii 10 NTO		
				INAL READIN	NGS TO ST	TABILISATION	FIELD SHEET			
	Time		Volume	Water		50		Dissolved	Water	Turbidity
	Time Elapsed	Time	Removed (L)	Temp. (°C)	рН	EC ((μS/cm)	ORP (mV)	Oxygen (mg/L)	Level (m)*	(NTU) / Water Appearance†
Before	0	2:257	Cell	18.4	6.65	539	-16.6	3.95	2.01	9.67
During	3	3:00	0-5	16.5	6.24	539	4.8	0.79	2.03	14.00
During	S	3:02	1.0	16.6	6.19	537	-8.9	0.51	2.05	13.74
During	8	3:05	1.5	16.6	6.15	532	-5.1	0.39	2.06	20.10
During	10	3:07	2.0	16.5	6.12	504	0.2	0.39	2.07	23./3
During	12	3:09	2.5	16.5	6.10	497	7.9	0.50	2.07	29.75
During During				7- 7-						
During										
During										
During										
† CL=clear, CC	D=cloudy, T	U=turbid, SI=	silty, SA=sand	dy		Train Volume				
Comments						of sample tube I = internal dia				cell volume.
comments						ample interna				
					· · · · · ·	5.5L	T D OIIIII	Joine per me	ter	
					1.					
	Wel	l ligh ce	ald no	t fit u	1th (	ap -we	M Cap	remov	ed and	d replace
		with	tape		7112	200	-			,
Analyses Bear	iirad. DEAG	Scuito			11)	2.26				
Analyses Requ Serial number			unit							*
Shake test – fo			Yes	No						
COC form com			Yes		1	etter given to	landowner	? Yes		
Location field			Yes	□ N/A		Well field shee			Γ	N/A
Stabilisation cr			Yes							
completed?			<u>.</u>							

<sup>\* =</sup> needs to be recorded each time you take a set of parameters

		NZDF	PFAS SAMP	LING FOR	M (sepa	rate form fo	r each p	rimary sample	e)	
Location:	Ohak	ea				Job Number		Anzu	4126	
			11 4	_1	_	Sample Cod		C 1 1105	114	
Land owne	r:M	c Done	11 Ros	C -		(Name):		amio.	1	
Address:	-	•				Date and tin	ne:	11/04/20	1	
Weather:						Coordinates	:	E		
	1	overcast				(NZTM)		N		
Sample poi	_		well/ surface	water		Sampled By:	-	Nathan		(Clean hands)
Description	of sample				•		-	KM	~	(Dirty hands)
point:		Gro	n well.				-	100-1	,	
	sample poi	nt		(r	 n)	Site Photos t	taken?	☐ Yes	No	
from bore:		-		(,		one i notos i	idicii.			
Sampling e	quipment:	Inu	flow			Water use:		Drinking wa Fodder irrigation		
		1000			_			Todaci irigatio	on y don po	tubic
						Animals obs	erved on	Chickens 🗶		
QA/QA San	nple Codes:		_			site:		goats		
Duplicate		-				Minimum	duma hat	woon roodings.	1	
Trip Blank			_			(see formula		ween readings:	1 sample t	rain volume
Field Blank		-	_			•	,			
Rinsate Blai	nk (include	-			-					
	of equipme	nt			_					
cleaned e.g						Key Stabilisa	tion Crite	ria:		
			d using field p	parameters				3%, turbidity ±	10% of prio	r reading and
below (3 co	nsecutive r	eadings)				± 10 for valu	es greate	r than 10 NTU		
			TRANSFER F	INAL READI	NGS TO S	TABILISATION	FIFI D SHI	FFT		
			Volume	Water				Dissolved	Water	Turbidity
	Time		Removed	Temp.		EC	ORP	Oxygen	Level	(NTU) / Water
Defere	Elapsed	Time	(L)	(°C)	pH	((μS/cm)	(mV)	(mg/L)	(m)*	Appearance†
Before During	2	1037	0.5	16.1	693	387.7	134.5	2.35	4.75	49.40
During	4	1039	1.0	15.8	6.16	381.3	129.7	0.84	4.75	196-66
During	6	10 43	1.5	15.8	6.12	380.4	122.9	- 111	4.75	297.86
During	8	1045	2.0	15-8	6.09	379.8	123. 2	0.39	4.75	317.92
During	10	1047	2.5	15.8	6.07	380.0	124. 2	0.36	4.75	418.55
During	12	1049.	3.0	15-8	6.06	380.2	125.5	0.37	4.75	333, 16
During	14.	1050	3.5	15.8	6.06	379.9	125.5	0.31	4.75	358.87
During						,,,,				001
During										
During										
† CL=clear, C	CO=cloudy, 7	ΓU=turbid, SI=	silty, SA=san	dy		Train Volume				
Comments					(length	of sample tub	e x 3.141	$\times d^2 / 4000) + flo$	ow through	cell volume.
DIB -	7.82	ΛΛ						sample tube in n ≈ 30mL per me		
DTW -	4.74	m			water s	ample interna	חוווס – עווו	i ≈ 30mL per me	eter	
				Sonk	olen fi	ain O	.5			
Analyses Red										
		quality sensor								
Shake test –			Yes	✓ No						
COC form co			Yes			Letter given to				
Location field			Yes	N/A	1	Well field shee	et comple	ted? Yes		N/A
Stabilisation completed?	criteria fielo	d sheet	Yes							
completed!										

<sup>\* =</sup> needs to be recorded each time you take a set of parameters

		NZDF I	PFAS SAMP	LING FOR	M (sepa	rate form fo	r each pr	rimary samp	e)	
Location:	Ohak	ea			1	Job Number	r: _	A0274	4128	
Land owne	ır.					Sample Cod (Name):	e /	GWILL 1		
Address:	off	Pail	n Road	d	-	Date and tin	_	10/04/	24	
Weather:	911	Parie	1			Coordinates	-	E		
77.7		Cun	~~			(NZTM)	_	N		
Sample poi	int:	tap /	well surface	water	_	Sampled By:	-	Ban		(Clean hands)
Description							_	Noth	on	(Dirty hands)
point:			-						,	
	sample poi	nt	_	(r	m)	Site Photos t	taken?	Yes 🗸	No	
from bore:		-			_			Drinking w	ater / Stock	watering /
Sampling e	quipment:	pe	ybrut			Water use:		Fodder irrigat		
						Animals obs	erved on	Chickens /	cows / shee	en / nigs /
QA/QA San	nple Codes:					site:			COWS / SIICC	
Duplicate			~							
Trip Blank			-			Minimum vo (see formula		ween readings	: 1 sample t	rain volume
Field Blank		-								
Rinsate Blai	nk (include	-	-		_	7.48.				
description		ent ———								
cleaned e.g	. dipper)					Key Stabilisa	tion Crite	ria:		
		has stabilise	d using field p	parameters				3%, turbidity ±	10% of prio	r reading and
below (3 co	nsecutive r	eadings)				± 10 for valu	es greater	than 10 NTU		
			TRANSFER F	INAL READI	NGS TO S	TABILISATION	FIELD SHE	ET		
			Volume	Water				Dissolved	Water	Turbidity
	Time	Time	Removed	Temp.		EC	ORP	Oxygen	Level	(NTU) / Water
Before	Elapsed	Time 13-24	(L)	(°C)	pH 6.49	((μS/cm)	(mV)	(mg/L)	(m)*	Appearance†
During	2	1326	0.75	15.5	6.23	264.4	37.5	1.45	7.48	13.13
During	4	1328	1.5	15.4	6.14	263.6	52.8	1.22	7.48	29.57
During	6	1330	2.25	15.4	6.10	263.6	61.1	1.12	7.48	46.36
During	8	1332	3.00	15.3	6.08	263.1	67.9	1.05	7.48	53.28
During	8	1334	3.75	15-2	6.06	263.1	72.1	1.03	7.48	62.79
During	10	1336	4.5	8-2	6.04	263.0	77.6	1.00	7.48	82.27
During			6.0							
During										
During										
During † CL=clear, (	CO=cloudy,	L TU=turbid, SI=	l =siltv. SA=san	l dv	Sample	Train Volume	Calculation	on (I.)		
	,,	,	//	/	(length	of sample tub	e x 3.141 x	$\times d^2 / 4000) + f$		cell volume.
Comments								sample tube in		
1	T . 7	1.0			Water s	ample interna	ıl ø = 6mm	n≈ 30mL per m	eter	
Z)	TIR II	<u>69</u>								
	D fi.	31								
Analyses Red	quired: PFA	S suite								
		quality sensor								
Shake test –			Yes	✓ No						
COC form co			Yes			Letter given to			3	_
Location fiel			Yes	N/A	1	Well field shee	et complet	ted? Yes	5	N/A
Stabilisation completed?	criteria fiel	u sneet	Yes							

<sup>\* =</sup> needs to be recorded each time you take a set of parameters

		NZDF P	FAS SAMPL	ING FORM	<b>∕I</b> (separ	ate form for	r each prin	nary sample	2)		
Location:	Ohake	ea				Job Number:	. /	10274	4128		
	117	NE			y	Sample Code	<u> </u>				
Land owner	r: <u>////</u>	D L	0 0		_	(Name):		W111. Z	1 - 64	W - 1	
Address: Weather:	DEF	Bailey	Road	-	_	Date and tim	ne:	1:04	10/4	124	
Weather.						Coordinates:	E				
	S	man				(NZTM)	N				
Sample poi	nt:	_ tap /	vell/ surface	water	_	Sampled By:		Vathor		(Clean hands)	
Description	of sample							Byn		(Dirty hands)	
point:			-						,		
Distance of	sample poi	nt	-	(m	n)	Site Photos t	aken?	Yes 🔽	No		
from bore:		-			_			Drinking wa	ter / Stock w	vatering /	
Sampling ed	quipment:	blad	lder p	mp		Water use:	Fo	dder irrigatio			
04/04 5	l. C. d					Animals obse	erved on		cows/sheep	/ pigs /	
QA/QA Sam Duplicate	ipie Codes:					site:		goats			
Duplicate		-	·		_	Minimum vo	lume betwe	en readings:	1 sample tra	ain volume	
Trip Blank			-			(see formula					
Field Blank											
Rinsate Blar	nk (include	-			_						
description		nt			_						
cleaned e.g.	. dipper)					Key Stabilisa	tion Criteria	:			
		has stabilised	dusing field p	arameters		pH ± 0.1, EC :			10% of prior	reading and	
below (3 co	nsecutive r	eadings)				± 10 for value	es greater th	nan 10 NTU			
			TRANSFER F	INAL READII	NGS TO ST	ABILISATION	FIELD SHEET	г			
	*		Volume	Water				Dissolved	Water	Turbidity	
	Time		Removed	Temp.		EC	ORP	Oxygen	Level	(NTU) / Water	
D (	Elapsed	Time	(L)	(°C)	7.52	((μS/cm)	(mV)	(mg/L)	(m)*	Appearance†	
Before	O U	12:51	4	14.2	6.28	698	-132.7	1.72	9-20	26.16	
During During	11	12:59	8	14.1	5.49	786	21-8	0.58	9-20	15.80	
During	213	1:01	9.5	14.1	5.46	745	33.4	0.19	9 + 20	13.84	
During	16	1:04	12	14.0	5.42		44.2	0.16	9-20	5.8	
During	1 0		12	7-1.0	0.10	7.	44.0	0.16	, ,	9.8	
During										-	
During											
During											
During											
During											
† CL=clear, (	CO=cloudy,	TU=turbid, SI=	silty, SA=san	dy		Train Volume					
Comments						of sample tub d = internal dia				cell volume.	
DTW	9.2	6.				ample interna					
DIW	4				vater 3			e train			
						40	sarger	6 /1 11			
Analyses Re	-										
		quality senso									
Shake test –			Yes	✓ No							
COC form co	•		/ Yes			Letter given to				¬	
Location fiel		·	Yes	N/A	١ ،	Well field shee	et complete	d? Yes		N/A	
Stabilisation	criteria fiel	d sheet	Yes								
completed?											

<sup>\* =</sup> needs to be recorded each time you take a set of parameters

		NZDF I	PFAS SAMP	LING FOR	<b>VI</b> (separ	ate form fo	r each pr	imary	sample	e)	
					(						
Location:	Ohake	ea			1	Job Number		402	Ful	1129	
Land owns	r.	NZDE				Sample Code		GWI	11 -		
Address:  Address:  Address:						(Name): Date and tim	_				1 2 1
Weather:							_	11:30	0	10/48	124
						Coordinates	: _	E			
		unnu				(NZTM)		N			
Sample poi	nt:	tap	well) surface	water		Sampled By:	_	No	atho	5	(Clean hands)
Description	of sample							R	S		(Dirty hands)
point:			-							,	
Distance of	sample poi	nt		(n	n)	Site Photos t	aken?	Yes		No	-
from bore:		-							سيد د دادا		
Sampling e	nuinment:	Black	Ides Pu	1100		Water use:				iter / Stock won / Non-pot	
Sumpling Co	quipinent.	Oron	AUG PU	WYP	_	water use.		rouder	iiiigatic	ni / Non-pot	abig
						Animals obse	erved on	Chic	kens	cows/sheep	o / pigs /
QA/QA Sam	ple Codes:		_			site:		goa	ts	UA	
Duplicate											
Tuin Diami			_			Minimum vo		ween re	adings:	1 sample tra	ain volume
Trip Blank		-			_	(see formula	below)				
Field Blank			_								
Rinsate Blan			_								
description		nt									
cleaned e.g						Key Stabilisa					
			d using field p	parameters		pH ± 0.1, EC : ± 10 for value				10% of prior	reading and
below (5 co	below (3 consecutive readings)						es greater	than 10	DINIO		
			TRANSFER F	INAL READI	NGS TO S	TABILISATION	FIELD SHE	ET			
			Volume	Water				Diss	solved	Water	Turbidity
	Time		Removed	Temp.		EC	ORP		ygen	Level	(NTU) / Water
	Elapsed	Time	(L)	(°C)	pH	((μS/cm)	(mV)	,	ng/L)	(m)*	Appearance†
Before	0	17:50	Cell	18.8	8.68	546	-234.7	_	_	6.86	27.47
During	6	11:26	2.5	14.7	8.31	644	-284. 8	- 1.0	06	6-86	321.1
During	18	11:38	5.0	15.1	5.52	806	-47.8	1-1	2	6-86	66 06
During	27	11:47	7.5	14.4	7.02	759	-132-1	1.0		6-86	56.6
During	31	11:81	0.01	14.8	6.57	762	-116.4			6-86	19.37
During	39	11:59	12.5	15.1	6.22		-75.4		23	6-86	10.57
During	49	12:09	15.0	15.2	5.78	800	-20.5	10.	23	6-86	14.74
During	58	12:18	17.5	14.8	5.41	815	26.0	Ö.	1	6 -86	145.2
During		12:25	20.0	14-3	6.58	780	~63.9	0.		6 -86	9-95
During		12:31	22.5	14.1	5.50	793	20.	1.0	7		66.5
During	20 1 1	TILL LILE	111 64	1				<u></u>			
T CL=clear, C	.O=cloudy,	i U=turbia, Si	silty, SA=san	dy		Train Volume of sample tub			00) + fl	ow through	call valuma
Comments						d = internal dia					celi volume.
DTW: 6.	86					ample interna					-
					•	SL					
Blown	hose	at 6	Si					,			
Blown	hase	e at	19.01			water l	evel :	stab	le.		
Blown	hos	e at	22.5	L							
						Sample	d- at	12	:31 -	+ assu	med
Analyses Re	quired: PFA	S suite				10	wat	- Colu	m		
Serial numb	er of water	quality senso	r unit:	/		,,,,					
Shake test –	foam produ	ıced?	Yes	No							
COC form co	mpleted an	d checked?	Yes			Letter given to	landown	er?	Yes		
Location fiel	-		Yes	□ N/A		Well field shee			Yes		N/A
Stabilisation			Yes						_		
completed?			L 163								

<sup>\* =</sup> needs to be recorded each time you take a set of parameters

	NZDF PFAS SAMPLING FORM (separate form for each primary sample)										
Location:	Ohake	ea			,	Job Number	•	A0274	4126		
	_	_				Sample Code	_	HOZV	2 40 1		
Land owner	er:	-	0 1			(Name):	_	GW110	· E		
Address: Weather:	off	sped	Load			Date and tin	ne: _	2:48	10/1	1/24	
weather:			•			Coordinates	: _	E			
1		Suna	1			(NZTM)		N .			
Sample po	int:	_ tap /(	well) surface	water		Sampled By: (Clean har					
Description	n of sample							Bn	2	(Dirty hands)	
point:	C1	. —					_	. ,			
from bore:	f sample poi	nt _	•	(n	n)	Site Photos t	aken?	Yes 📝	No		
Sampling e	quipment:	101	adder	pm	10	Water use:		Drinking wa Fodder irrigatio			
				•	•	A minnala abass		Chi-line /	-1		
	mple Codes:		_			Animals obsestite:	erved on	Chickens / o		p / pigs / 	
Duplicate		-	_		_			ween readings:	1 sample to	rain volume	
Trip Blank Field Blank		-			_	(see formula	below)				
		-			_						
Rinsate Bla description	nk (include of equipme	nt			_						
cleaned e.g						Key Stabilisa	tion Crite	ria:			
			d using field p	arameters		pH ± 0.1, EC :	± 3%, T ± 3	3%, turbidity ± :	10% of prio	r reading and	
below (3 co	onsecutive r	eadings)				± 10 for value	es greater	than 10 NTU			
			TRANSFER F	INAL READI	NGS TO ST	ABILISATION	FIELD SHE	ET			
			Volume	Water				Dissolved	Water	Turbidity	
	Time Elapsed	Time	Removed (L)	Temp. (°C)	nU.	EC ((μS/cm)	ORP	Oxygen	Level	(NTU) / Water	
Before	O	2:28	cell	16.8	6.3S	381. O	(mV)	(mg/L)	(m)*	Appearance†	
During	2	2.30	0.6	16.3	6.12	371.1	48.0		1.99	42.32	
During	4	2:32	1.2	16.3	6.08		85	0.83	1.99	46.65	
During	6	2:34	1.8	16.3	6.05	375.2	58	0.45	1.99	45.61	
During	8	2:36	2.4	16.4	6.04	373.1	8.88	0.40	1.99	36.47	
During	10	2:38	3.0	16.4	6.04	371.5	58.4	O. 38	1.99	42.14	
During	12	2:40	3.6	16.4	6.05	367.8	59.2	0.32	1.99	42.59	
During											
During											
During											
During † CL=clear	CO=cloudy 7	TII=turbid SI-	silty, SA=san	dv	Sample:	Train Volume	Calculati	on /1)			
Comments	co cloudy, i	o-tarbia, 51-	-siity, SA-saii	шу	(length o	of sample tube	e x 3.141 x	$(d^2/4000) + flo$		cell volume.	
			-			Where d = internal diameter of sample tube in mm Water sample internal Ø = 6mm ≈ 30mL per meter					
							580 = 0				
10 JUN 1 .99.											
-		-	TB 10.	.31	S	mall vo	Olune.	ot real p	04 qt	first tlash	
Analyses Bo	quired: PFA	S cuito									
			· unit·		•						
Serial number of water quality sensor unit:  Shake test – foam produced?  Yes  No											
	mpleted and		Yes		1	etter given to	landown	er? Yes			
	d sheet com		Yes	N/A		Vell field shee			Г	N/A	
Stabilisation	criteria fielo		Yes					[ 163			
completed?											

<sup>\* =</sup> needs to be recorded each time you take a set of parameters

Location: Ohakea  Land owner: Address: Weather: Coordinates: (Name): Date and time: 3:15   0 / 4 / 24    Sample point: Lap/kell/ surface water   Sample By: Date and time: 3:15   0 / 4 / 24    Sample point: Lap/kell/ surface water   Sample By: Date and time: 3:15   0 / 4 / 24    Sample point: Lap/kell/ surface water   Sample By: Date and time: 3:15   0 / 4 / 24    Sample point: Lap/kell/ surface water   Sample By: Date and time: 3:15   0 / 4 / 24    Sample Doint: Lap/kell/ surface water   Sample By: Date and time: 3:15   0 / 4 / 24    Sample Doint: Lap/kell/ surface water   Sample By: Date and time: 3:15   0 / 4 / 24    Sample Doint: Lap/kell/ surface water   Sample By: Date and time: 3:15   0 / 4 / 24    Sample Doint: Lap/kell/ surface water   Sample By: Date and time: 3:15   0 / 4 / 24    Sample Doint: Lap/kell/ surface water   Sample By: Date and time: 3:15   0 / 4 / 24    Sample Doint: Lap/kell/ surface water   Sample By: Date and time: 3:15   0 / 4 / 24    Sample Doint: Lap/kell/ surface water   Sample By: Date and time: 3:15   0 / 4 / 24    Sample Doint: Lap/kell/ surface water   Sample By: Date and time: 3:15   0 / 4 / 24    Sample Doint: Lap/kell/ surface water   Sample By: Date and time: 3:15   0 / 4 / 24    Naminates: Coordinates: E(NZTM)   NURL Sample By: Date and time: 3:15   0 / 4 / 24    Minimum volume between readings: 1 sample train volume (see formula below)  **Key Stabilisation Criteria: Ph ± 0.1, Ect 3%, 1 turbidity ± 10% of prior reading and ± 10 for value greater than 10 NTU  **TRANSFER FINAL READINGS TO STABIUSATION FIELD SHEET  **Trip Blank   Time   (1)   (2)   (2)   (2)   (3)							
Land owner: Address: Weather:  Coordinates:  (NATM)  Sample point:  Land water  Sample point:  Land water   Water use:  Land water   Water use:  Land water   Fodder irrigation   Non-potable    Land water   Water use:  Land water   Water use:  Land water   Land water   Land water    Land water    Land water							
Address: Weather:  Coordinates: (NZTM)  Sample point: tag/well) surface water  Description of sample point from bore:  Sampling equipment: Bladdels Purp  OA/QA Sample Codes: Duplicate  Trip Blank Field Blank Rinsate Blank (include description of equipment cleaned e.g. dipper)  NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)  TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET  Time Elapsed Time (U) (C) pH ((µS/cm) (mV) (mg/L) (m)* Appearance1  Before O 3 O2 (all 17.2 6.46 81 0.7 3.50 1.9 1.7 7.6  During 5 3.07 2 15.3 6.78 98.1 10.8 2.0 3.8 1.9 9.86  During 15 3.1 4 15.1 6.84 860 - R4 4 0.24 1.9 9.86  During 15.3 1.7 6 15.1 6.84 860 - R4 4 0.24 1.9 9.86  During 20 3.22 8 15.1 6.84 840 - R4 4 0.24 1.9 9.86  During 15.3 2.2 8 15.1 6.84 840 - R4 4 0.24 1.9 9.86  During 20 3.22 8 15.1 6.84 840 - R4 4 0.24 1.9 9.86  During 15.3 2.2 8 15.1 6.84 840 - R4 4 0.24 1.9 9.86  During 15.3 2.2 8 15.1 6.84 840 - R4 4 0.24 1.9 9.86  During 15.3 2.2 8 15.1 6.84 840 - R4 4 0.24 1.9 9.86  During 15.3 2.2 8 15.1 6.84 840 - R4 4 0.24 1.9 9.9 86  During 15.3 2.2 8 15.1 6.84 840 - R4 4 0.24 1.9 9.9 86  During 15.3 2.2 8 15.1 6.84 840 - R4 4 0.24 1.9 9.9 86  During 15.3 2.2 8 15.1 6.84 840 - R4 4 0.24 1.9 9.9 86  During 15.3 2.2 8 15.1 6.84 840 - R4 4 0.24 1.9 9.9 86  During 15.3 2.2 8 15.1 6.84 840 - R4 4 0.24 1.9 9.9 86  During 15.3 2.2 8 15.1 6.84 840 - R4 4 0.24 1.9 9.9 86  During 15.3 2.2 8 15.1 6.84 840 - R4 4 0.24 1.9 9.9 86  During 15.3 2.2 8 15.1 6.84 840 - R4 4 0.24 1.9 9.9 86  During 15.3 2.2 8 15.1 6.84 840 - R4 4 0.24 1.9 9.9 86  During 15.3 2.2 8 15.1 6.84 840 - R4 4 0.24 1.9 9.9 86  During 15.3 2.2 8 15.1 6.84 840 - R4 4 0.24 1.9 9.9 86  During 15.3 2.2 8 15.1 6.84 840 - R4 4 0.24 1.9 9.9 86  During 15.3 2.2 8 15.1 6.84 840 - R4 4 0.24 1.9 9.9 86  During 15.3 2.2 8 15.1 6.84 840 - R4 4 0.24 1.9 9.9 86  During 15.3 2.2 8 15.1 6.84 840 - R4 4 0.24 1.9 9.9 86  During 15.3 2.4 8 15.1 6.84 840 - R4 4 0.24 1.9 9.9 86  During 15.3 2.4 8 15.1 6.84 840 - R4 4 0.24 1.9 9.9 86  During 15							
Weather:  Coordinates: [E (NZTM)] N  Sample point: tag/feelly surface water  Description of sample point from bore:  Sampling equipment: Bladder Purp  OA/QA Sample Codes: Duplicate  Trip Blank  Field Blank  Field Blank  Field Blank  Finate Blank (include description of equipment cleaned e.g. dipper)  NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)  TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET  Time Elapsed Time (I.) (*C) pH (II) (*C) pH (II) (*C) pH (II) (*C) pH (III) (*C) pH (							
Sample point:  Description of sample point tap/kell\() surface water  Distance of sample point from bore:  Sampling equipment:  Sampling equipment:  Blacker Purp  Water use:  Animals observed on site:  Blank include description of equipment cleaned e.g. dipper)  NorI: purge until well has stabilised using field parameters below (3 consecutive readings)  TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET  Time Elapsed Time  (L) (C) pH (I)(S/Cm) pH (I)(S/Cm) (m/V) (mg/L) (m)*  Page and the page							
Sample point: tap/well's surface water  Description of sample point Sistance of sample point from bore:  Sampling equipment:  Blacker Pump  Water use:  Site Photos taken?  Water use:  Dorinking water / Stock watering / Fodder irrigation / Non-potable, site:  Site Photos taken?  Water use:  Dorinking water / Stock watering / Fodder irrigation / Non-potable, site:  Site Photos taken?  Water use:  Dorinking water / Stock watering / Fodder irrigation / Non-potable, site:  Site Photos taken?  Water use:  Dorinking water / Stock watering / Fodder irrigation / Non-potable, site:  Site Photos taken?  Water use:  Dorinking water / Stock watering / Fodder irrigation / Non-potable, site:  Site Photos taken?  Water use:  Dorinking water / Stock watering / Fodder irrigation / Non-potable, site:  Site Photos taken?  Water use:  Dorinking water / Stock watering / Fodder irrigation / Non-potable, site:  Site Photos taken?  Water use:  Dorinking water / Stock watering / Fodder irrigation / Non-potable, site:  Site Photos taken?  Water use:  Dorinking water / Stock watering / Fodder irrigation / Non-potable, site:  Site Photos taken?  Water use:  Dorinking water / Stock watering / Fodder irrigation / Non-potable, site:  Site Photos taken?  Water use:  Dorinking water / Stock watering / Fodder irrigation / Non-potable, site:  Site Photos taken?  Water use:  Dorinking water / Stock watering / Fodder irrigation / Non-potable, site:  Site Photos taken?  Water use:  Dorinking water / Stock watering / Poder irrigation / Non-potable, site:  Site Photos taken?  Water use:  Chickens / Cows / sheep / pigs / goats / All water use:  Sample Tribution Criteria:  Ph ± 0.1, E £ ± 3%, turbidity ± 10% of prior reading and ± 10 for values greater than 10 NTU   Tribution Criteria:  Ph ± 0.1, E £ ± 3%, turbidity ± 10% of prior reading and ± 10 for values greater than 10 NTU   Tribution Criteria:  Ph ± 0.1, E £ ± 3%, turbidity ± 10% of prior reading and ± 10 for values greater than 10 NTU   Tribution Criteria:  Ph ± 0.1, E £ ± 3%, turbidity ± 10% of							
Description of sample point: Distance of sample point from bore:  Sampling equipment:  Blacker Purp  Water use:  Diniking water / Stock watering / Fodder irrigation / Non-potable.  Animals observed on site:  Duplicate  Trip Blank Field Blank Rinsate Blank (include description of equipment cleaned e.g. dipper)  NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)  TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET  Time Elapsed Time (I)  Volume Removed Temp. Elapsed Time (I)  Solved Temp. Elapsed Time (I)  Tor values greater than 10 NTU   Turbidity Tu							
point: Distance of sample point from bore:  Sampling equipment:  Blacker Prup  Water use:  Animals observed on site:  Duplicate  Minimum volume between readings: 1 sample train volume (see formula below)  Key Stabilisation Criteria: ph ± 0.1, EC ± 3%, T ± 3%, turbidity ± 10% of prior reading and ± 10 for values greater than 10 NTU  TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET  Time Time Elapsed Time (I) (C) pH ((I)S/cm) (mV) (mg/L) (my) Appearance Ap							
Distance of sample point from bore:  Sampling equipment:  Blacker Purp  Water use:  Animals observed on site:  Site Photos taken? Yes v No  Drinking water / Stock watering / Fodder irrigation / Non-potable.  Animals observed on site:  Site Photos taken? Yes v No  Drinking water / Stock watering / Fodder irrigation / Non-potable.  Animals observed on site:  Site Photos taken? Yes v No  Drinking water / Stock watering / Fodder irrigation / Non-potable.  Animals observed on site:  Site Photos taken? Yes v No  Drinking water / Stock watering / Fodder irrigation / Non-potable.  Animals observed on site:  Site Photos taken? Yes v No  Drinking water / Stock watering / Fodder irrigation / Non-potable.  Animals observed on site:  Site Photos taken? Yes v No  Drinking water / Stock watering / Fodder irrigation / Non-potable.  Animals observed on site:  Site Photos taken? Yes v No  Drinking water / Stock watering / Fodder irrigation / Non-potable.  Animals observed on site:  Sample Tain volume between readings: 1 sample train volume (see formula below)  Key Stabilisation Criteria:  pH ± 0.1, EC ± 3%, T ± 3%, turbidity ± 10% of prior reading and ± 10 for values greater than 10 NTU  TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET  Time  Time  Elapsed  Time  Elapsed  Time  (U) C) pH ((µS/cm) (mV) (mg/L) (m)* Appearance†  Elapsed  Time  (U) T. C G-46 8 IS IQ P 3 P NO IP P P P P P P P P P P P P P P P P P P							
From bore:   Site Photos taken?   Yes   No   Non-potable							
Sampling equipment:  Animals observed on site:  Duplicate  Trip Blank Field Blank Rinsate Blank (include description of equipment cleaned e.g. dipper)  NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)  TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET  Time Removed Temp.  EC ORP Oxygen Level (NTU) Water Appearance†  Before O 3 O2 (pll 17.2 6.46 815 10.9 3.90 1.9 9 8C.86  During During 15 3.17 6 IS.1 6.84 860 - (24.4 0.24 1.99 9.86  During 15 3.22 8 IS.1 6.84 849 - 133.4 0.13 1.99 8C.86  During 25 15.28 10 S.0 6.88 844 - 133.4 0.13 1.99 9.86  During 15 3.22 8 IS.1 6.86 844 - 133.4 0.13 1.99 9.86  During 25 15.28 10 S.0 6.88 844 - 133.4 0.13 1.99 9.86  During 15 15.28 10 S.0 6.88 844 - 133.4 0.13 1.99 9.86  During 25 15.28 10 S.0 6.88 844 - 133.4 0.13 1.99 9.86  During 15 15.28 10 S.0 6.88 844 - 133.4 0.13 1.99 9.86  During 25 15.28 10 S.0 6.88 844 - 133.4 0.13 1.99 9.86  During 25 15.28 10 S.0 6.88 844 - 133.4 0.13 1.99 9.86  During 25 15.28 10 S.0 6.88 844 - 133.4 0.13 1.99 9.86  During 25 15.28 10 S.0 6.88 844 - 133.4 0.13 1.99 9.86  During 25 15.28 10 S.0 6.88 843 - 135.9 0.15 1.99 10.06  During During Suring Siesilty, SA=sandy Sample Train Volume Calculation (L)							
OA/OA Sample Codes: Duplicate  Trip Blank Field Blank Rinsate Blank (include description of equipment cleaned e.g., dipper) NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)  TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET  Trime Removed Removed Temp. Elapsed Time (L) (°C) pH ((µS/cm) (mV) (mg/L) (m)* Appearance†  Before O 3 O2 (a)   17 \cdot C 46 8   S   10 9 \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$							
OA/OA Sample Codes: Duplicate  Trip Blank Field Blank Rinsate Blank (include description of equipment cleaned e.g., dipper) NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)  TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET  Trime Removed Removed Temp. Elapsed Time (L) (°C) pH ((µS/cm) (mV) (mg/L) (m)* Appearance†  Before O 3 O2 (a)   17 \cdot C 46 8   S   10 9 \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$							
Trip Blank Field Blank Rinsate Blank (include description of equipment cleaned e.g. dipper)  NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)  TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET  TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET  TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET  TIME Elapsed Time (L) ("C) pH ((μ5/cm) (my) (mg/L) (m)* Appearance† Appearanc							
Trip Blank Field Blank Rinsate Blank (include description of equipment cleaned e.g. dipper) NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)  TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET  Time Elapsed Time (L) (°C) PH ((µS/cm) (mV) (mg/L) (m)* Appearance† Appearance†  Before O 3 02 (µM 17 2 6 46 815 10 9 3.00 1.99 7.76  During During 10 3.12 4 15.1 6.84 860 - R44 6.24 1.99 88.56  During 15 3.17 6 15.1 6.84 860 - R44 6.24 1.99 9.86  During 15 3.17 6 15.1 6.84 860 - R44 6.24 1.99 9.86  During 15 3.17 6 15.1 6.86 844 - 133.4 0.17 1.99 9.86  During 20 3.22 8 15.1 6.86 844 - 133.4 0.17 1.99 9.86  During During During During During Surphy (Sample Train Volume Calculation (L)							
Rinsate Blank (include description of equipment cleaned e.g. dipper)  NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)  TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET  Time Flapsed Time (L) (°C) pH (II) (SC) pH (III) (III) (III) (III) (III) (III) (III) (III) (III) (IIII) (IIII) (IIII) (IIII) (IIIII) (IIIIII) (IIIIIIII							
description of equipment cleaned e.g. dipper)  NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)  **TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET**  Time Removed Temp. (L) (°C) pH ((µS/cm) (mV) (mg/L) (m)* Appearance**  Before O 3 O2 (QM 17.2 6.46 8IS 10.9 3.90 1.99 7.76  During 5 3.07 2 15.3 6.78 981 -108 2 0.38 1.99 8C.86  During 10 3:12 4 15.1 6.84 860 - 24.4 6.24 1.99 9.86  During 15 3.17 6 15.1 6.84 860 - 24.4 6.24 1.99 9.86  During 20 3.22 8 15.1 6.84 844 -133.4 0.17 1.99 9.86  During 20 3.22 8 15.1 6.86 844 -133.4 0.17 1.99 10.06  During 0							
Cleaned e.g. dipper   NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)   STRANSFER FINAL READINGS TO STABILISATION FIELD SHEET   Turbidity to values greater than 10 NTU							
NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)  TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET  Time Removed Temp. (L) (°C) pH ((µS/cm) (mV) (mg/L) (m)* Appearance†  Before O 3 O2 (µ 17 2 6 46 8 S 10 9 81 -108 2 0 38 7 7 7 7 6  During S 3 07 2 15 1 6 84 860 - (24 4 6 34 4 7 -129 3 0 20 1 9 7 7 7 6  During 15 3 17 6 15 1 6 86 844 - 133 4 0 17 1 19 9 10 06  During 25 15 28 10 8 0 88 844 - 133 4 0 17 1 19 9 10 06  During During During S 15 28 10 8 0 8 8 444 - 133 4 0 17 1 19 9 10 06  During During S 15 28 10 8 0 8 8 444 - 133 4 0 17 1 19 9 10 06  During S 15 28 10 8 0 8 8 444 - 133 4 0 17 1 19 9 10 06  During S 15 28 10 8 0 8 8 444 - 133 4 0 17 1 19 9 10 06  During S 15 28 10 8 0 8 8 444 - 133 4 0 17 1 19 9 10 06  During S 15 28 10 8 0 8 8 444 - 133 4 0 17 1 19 9 10 06  During S 15 28 10 8 0 8 8 444 - 133 4 0 17 1 19 9 10 06  During S 15 28 10 8 0 8 8 8 8 8 9 0 15 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1							
TRANSFER FINAL READINGS TO STABILISATION FIELD SHEET							
Time   Flapsed   Time   Volume   Removed   Temp. (°C)   pH   ((μS/cm)   (mV)   (my/L)   (m)*   Appearance†							
Time   Flapsed   Time   Volume   Removed   Temp. (°C)   pH   ((μS/cm)   (mV)   (my/L)   (m)*   Appearance†							
Time   Removed   Temp.   EC   ORP   Oxygen   Level   (NTU) / Water   Appearance†    Before   O   3   O2   O2   O2   O2   O3   O3							
Before O 3 02 (ell 17.2 6 46 81S 10.9 3.90 1.99 7.76  During S 3.07 2. 15.3 6.78 981 -108.2 0.38 1.99 82.86  During 10 3.12 4 15.1 6.84 860 -24.4 6.24 1.99 9.86  During 15 3.17 6 15.1 6.84 847 -129.3 0.20 1.99 7.04  During 20 3.22 8 15.1 6.86 844 -133.4 0.17 1.99 9.47  During 25 15.28 10 5.0 6.88 843 -136.9 0.15 1.99 10.06  During During During							
During         5         3.07         2         15.3         6.78         9.81         -10.8.2         0.38         1.99         82.86           During         10         3.12         4         15.1         6.84         860         -24.4         6.24         1.99         9.86           During         15         3.17         6         15.1         6.84         847         -129.3         0.20         1.99         7.07           During         20         3.22         8         15.1         6.86         844         -133.4         0.17         1.99         9.47           During         25         15.28         10         15.0         5.88         8.43         -135.9         0.15         1.99         10.06           During         0         0         0         0.88         8.43         -135.9         0.15         1.99         10.06           During         0							
During         IO         3:12         4         15:1         6:84         860         -R4:4         6:24         1:99         9:86           During         15         3:17         6         IS:1         6:84         847         -129:3         0:20         1:99         7:04           During         25         15:28         10         5:0         6:86         8:44         -133:4         0:17         1:99         9:47           During         15:0         6:86         8:43         -136:9         0:15         1:99         10:06           During         10:0         1:0         1:0         1:0         1:0         1:0         1:0         1:0         1:0         0:0         1:0         1:0         0:0         1:0         0:0         1:0         0:0         1:0         0:0         0:0							
During       15       3 1 7       6       15 1       6 8 4 7       -129 3       0 20       1 97       7 0 7         During       20       3 2 2 8       15 1       6 8 8 8 4 4       -133 4 0 1 7       1 99       9 4 7         During       15 2 8 10       10 8 8 8 4 3       -136 9 0 15       1 99       10 0 6         During       10 10 0 6       10 10 0 6       1 99       10 0 6         During       10 10 0 6       1 99       10 0 6       1 99         During       10 10 0 6       1 99       10 0 6       1 99         During       10 10 0 6       1 99       10 0 6       1 99       10 0 6         During       10 10 0 6       1 99       10 0 6       1 99       10 0 6       1 99       10 0 6         During       10 10 0 6       1 99       1 99       10 0 6       1 99       10 0 6       1 99       10 0 6       1 99       10 0 6       1 99       10 0 6       1 99       10 0 6       1 99       10 0 6       1 99       1 0 0 6       1 99       1 0 0 6       1 99       1 0 0 6       1 99       1 0 0 6       1 99       1 0 0 6       1 99       1 0 0 6       1 99       1 0 0 6       1 99       1 0 0 6							
During         20         3.22         8         IS.1         6.86         844         -133.4         0.17         1.99         9.47           During         15.28         10         5.0         6.88         843         -136.9         0.15         1.99         10.06           During         During         0							
During         25         15·28         10         15·0         5·88         9.43         -136·9         1.99         10·06           During         During         0							
During   <							
During During During During During During During During Sample Train Volume Calculation (L)							
During During  † CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy  Sample Train Volume Calculation (L)							
During CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy Sample Train Volume Calculation (L)							
† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy  Sample Train Volume Calculation (L)							
Comments Where d = internal diameter of sample tube in mm							
UTW for TOC - 1.99 Water sample internal Ø = 6mm ≈ 30mL per meter							
2L							
C 11 1/21 - C - d - d - d - d - d - d - d - d - d							
Small volum of real pot of first filesh.							
Analyses Required: PFAS suite							
Serial number of water quality sensor unit:							
Shake test – foam produced? Yes No							
COC form completed and checked?  Yes							
Ectter given to landowner:							
Letter given to landowner? Yes  Location field sheet completed? Yes N/A Well field sheet completed? Yes N/A  Stabilisation criteria field sheet							

<sup>\*</sup> = needs to be recorded each time you take a set of parameters



NEW ZEALAND DEFENCE FORCE AND HORIZONS REGIONAL COUNCIL - ŌHAKEA: SURFACE WATER AND GROUNDWATER MONITORING FOR PFAS, APRIL 2024

**Appendix D: QA/QC Results** 

Table D-1: QA/QC Water Sampling Results - Duplicates - Per- and Poly-Fluoroalkyl Substances (PFAS)  $^{\rm 1}$ 

Sample Location	SW36	SW36		MW4	MW4	
Sample Name	OHA SW36 100424	OHA AAZ 100424		OHA MW4 090424	OHA AAV 090424	
Laboratory Reference	24-102531-1	24-102531-2	%RPD (SW36	24-100824-1	24-100824-2	%RPD (MW4
Monitoring Zone	Ōhakea -	off base	and AAZ)	Ōhakea -	on base	and AAV)
Sampled Date	10/04/2024	10/04/2024		9/04/2024	9/04/2024	
PFPrS	<0.0010	<0.0010	-	<0.025	<0.025	-
PFBS	0.0023	0.0021	9.09%	0.027	<0.025	-
PFPeS	0.0021	0.0019	10.00%	0.031	0.030	3.28%
di-PFHxS (1)	<0.0010	<0.0010	-	<0.025	<0.025	-
mono-PFHxS (1)	0.0031	0.0032	3.17%	0.060	0.061	1.65%
L-PFHxS (1)	0.016	0.016	0.00%	0.37	0.41	10.26%
Total PFHxS (3)	0.019	0.019	0.00%	0.43	0.47	8.89%
PFHpS	<0.0010	<0.0010	-	<0.025	<0.025	-
di-PFOS (5)	<0.0010	<0.0010	-	<0.025	<0.025	-
mono-PFOS (5)	0.0088	0.0087	1.14%	0.37	0.39	5.26%
L-PFOS (5)	0.0084	0.0092	9.09%	0.79	0.95	18.39%
Total PFOS (7)	0.017	0.018	5.71%	1.2	1.3	8.00%
Sum PFHxS+PFOS (1)	0.036	0.037	2.74%	1.6	1.8	11.76%
PFNS	<0.0020	<0.0020	-	<0.050	<0.050	-
PFDS	-	-	-	<0.10	<0.10	-
PFBA	0.016	0.016	0.00%	0.14	0.12	15.38%
PFPeA	0.052	0.052	0.00%	0.50	0.49	2.02%
PFHxA	0.035	0.035	0.00%	0.35	0.34	2.90%
PFHpA	0.015	0.016	6.45%	0.17	0.17	0.00%
PFOA	0.0067	0.0065	3.03%	0.16	0.17	6.06%
PFNA	0.0015	0.0016	6.45%	0.098	0.096	2.06%
PFDA	<0.0010	<0.0010	-	<0.025	<0.025	-
PFUnDA	<0.0010	<0.0010	-	<0.025	<0.025	-
PFDoDA	<0.0010	<0.0010	-	<0.10	<0.10	-
PFTrDA	<0.0010	<0.0010	-	<0.10	<0.10	-
PFTeDA	-	•	-	<0.10	<0.10	-
PFOSA	<0.0010	<0.0010	-	<0.025	<0.025	
NEtFOSA-M	=	•	-	<0.10	<0.10	-
NMeFOSA-M	-	-	-	<0.10	<0.10	-
NEtFOSAA	<0.0010	<0.0010	-	<0.025	<0.025	-
NMeFOSAA	<0.0010	<0.0010	-	<0.025	<0.025	-
NEtFOSE-M	<0.0010	<0.0010	-	<0.10	<0.10	-
NMeFOSE-M	<0.0010	<0.0010	-	<0.10	<0.10	-
4:2 FTS	<0.0010	<0.0010	-	<0.025	<0.025	-
6:2 FTS	<0.0010	<0.0010	-	0.29	0.26	10.91%
8:2 FTS	<0.0010	<0.0010	-	<0.10	<0.10	-
10:2 FTS	<0.0010	<0.0010	-	<0.025	<0.025	-
F-53B (major)	<0.0020	<0.0020	-	<0.10	<0.10	-
F-53B (minor)	<0.0010	<0.0010	-	<0.050	<0.050	-
Sum F-53B	<0.0020	<0.0020	-	<0.10	<0.10	-
FPrPA (3:3FTA)	<0.0010	<0.0010	-	<0.10	<0.10	-
FPePA (5:3FTA)	<0.0010	<0.0010	-	<0.025	<0.025	-
FHpPA (7:3FTA)	<0.0010	<0.0010	-	<0.025	<0.025	-
ADONA	<0.0010	<0.0010	-	<0.025	<0.025	-
HFPO-DA (GenX)	<0.0010	<0.0010	-	<0.050	<0.050	-
P37DMOA	<0.0010	<0.0010	-	<0.050	<0.050	-
PFECHS	<0.0020	<0.0020	-	<0.025	<0.025	-

1. Results in  $\mu g/L$ .

	_
-	No value available
<0.001	Below the limit of reporting
%PPD	Palative Percent Difference

A02744124\_QAQC\_Results\_April24.xlsx PATTLE DELAMORE PARTNERS LTD

Table D-2: QA/QC Water Sampling Results - Blanks - Per- and Poly-Fluoroalkyl Substances (PFAS)  $^{\mathrm{1}}$ 

Sample Location	le Location Öhakea - off base			Ōhakea - on base					
Sample Name OHA_ABA_100424		OHA_ABB_100424	OHA_ABC_100424	OHA_AAW_090424	OHA_AAX_090424	OHA_AAY_090424			
Lab Report Number	24-102531-3	24-102531-4	24-102531-5	24-100824-3	24-100824-4	24-100824-5			
Sample Type	Field Blank	Trip Blank	Rinsate	Field Blank	Trip Blank	Rinsate			
Sample Date	10/04/2024	10/04/2024	10/04/2024	9/04/2024	9/04/2024	9/04/2024			
PFPrS	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
PFBS	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
PFPeS	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
di-PFHxS (1)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
mono-PFHxS (1)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
L-PFHxS (1)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
Total PFHxS (3)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
PFHpS	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
di-PFOS (5)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
mono-PFOS (5)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
L-PFOS (5)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
Total PFOS (7)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
Sum PFHxS+PFOS (1)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
PFNS	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.0010			
PFDS	NR	NR	NR	<0.0050	<0.0050	<0.0050			
PFBA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
PFPeA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
PFHxA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
PFHpA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
PFOA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
PFNA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
PFDA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
PFUnDA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
PFDoDA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
PFTrDA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
PFTeDA	NR	NR	NR	<0.0010	<0.0010	<0.0010			
PFOSA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
NEtFOSA-M	NR	NR	NR	<0.0010	<0.0010	<0.0010			
NMeFOSA-M	NR	NR	NR	<0.0010	<0.0010	<0.0010			
NEtFOSAA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
NMeFOSAA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
NEtFOSE-M	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
NMeFOSE-M	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
4:2 FTS	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
6:2 FTS	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
8:2 FTS	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
10:2 FTS	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
F-53B (major)	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.0010			
F-53B (minor)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
Sum F-53B	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.0010			
FPrPA (3:3FTA)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
FPePA (5:3FTA)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
FHpPA (7:3FTA)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
ADONA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
HFPO-DA (GenX)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
P37DMOA	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010			
PFECHS	<0.0020	<0.0020	<0.0020	<0.0050	<0.0050	<0.0050			

NR	Not Reported
<0.001	Below the limit of reporting

A02744124\_QAQC\_Results\_April24.xlsx



NEW ZEALAND DEFENCE FORCE - ÕHAKEA: SURFACE WATER AND GROUNDWATER MONITORING FOR PFAS, APRIL 2024

**Appendix E: Sample Results Tables** 

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)  $^{\mathrm{1}}$ 

				PFAS in Groundwater						Guidelines	
Sample Name	MW4-1	MW4	MW4	MW4	OHA_FTA_MW4_5_300920	OHA_FTA_MW4_6_190321	OHA_FTA_MW4_7_271021	OHA FTA MW4 8 300322			
Location	MW4	MW4	MW4	MW4	MW4	MW4	MW4	MW4	1		
Sample Date	9/07/2015	1/08/2017	31/10/2017	5/07/2018	30/09/2020	19/03/2021	27/10/2021	30/03/2022	NZ Drinking Water Standard, MoH	Technical Draft Default Guideline	ANZ WQG 95% Species Protection - Technical Draft Default Guideline
Lab Report Number	ES1526105	841470	937355	1186580	2132127	2314824	2590573	2788510	2022 ²	Values 3	
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base	1	values	Values <sup>3</sup>
Sample Results									1		
PFPrS	-	0.0072	0.011	0.011	<0.025	<0.025	<0.025	<0.025	-	-	-
PFBS	0.05	0.032	0.043	0.034	0.025	0.034	0.033	0.035	-	-	-
PFPeS	-	0.022	0.065	0.051	0.029	0.046	0.048	0.046	-	-	-
di-PFHxS	-	<0.001	0.0017	0.0011	<0.025	<0.025	<0.025	<0.025	-	-	-
Mono-PFHxS	-	0.1	0.14	0.081	0.061	0.083	0.091	0.098	-	-	-
L-PFHxS	-	0.54	0.76	0.49	0.35	0.46	0.6	0.6	-	-	-
Total PFHxS <sup>4</sup>	1.35	0.64	0.9	0.57	0.41	0.54	0.69	0.7	-	-	-
PFHpS	-	0.032	0.059	0.032	<0.025	<0.025	<0.025	<0.025	-	-	-
di-PFOS	-	0.025	0.066	0.027	<0.025	0.029	0.032	0.026	-	-	-
Mono-PFOS	-	0.45	1.1	0.5	0.33	0.46	0.68	0.49	-	-	-
L-PFOS	-	1	2.1	1	0.69	0.91	1.2	0.9	-	-	-
Total PFOS <sup>4</sup>	3.02	1.5	3.3	1.5	1	1.4	1.9	1.4		0.0091 6	0.48 6
Sum of PFHxS and PFOS <sup>5</sup>	-	-	-	2.1	1.4	1.9	2.6	2.1	0.07	-	-
PFECHS	-	-	-	-	-	<0.025	<0.025	<0.025	-	-	-
PFBA	-	0.21	0.29	0.2	0.17	0.17	0.27	0.21	-		-
PFPeA	-	1	1.7	1	0.65	0.79	1.1	0.87	-		-
PFHxA	2.09	0.99	0.96	0.74	0.41	0.51	0.73	0.6	-		-
PFHpA	0.71	0.34	0.43	0.32	0.22	0.26	0.37	0.33			-
PFOA	0.54	0.26	0.48	0.3	0.19	0.25	0.38	0.29	0.56	19	220
PFNA	0.32	0.16	0.35	0.18	0.1	0.13	0.24	0.17			-
PFDA	-	0.0021	0.0053	0.0048	<0.025	<0.025	<0.025	<0.025	-	-	-
PFUnDA	<0.05	<0.005	0.003	-	<0.025	<0.025	<0.025	<0.025	-	-	-
PFTrDA	<0.05	-	-	-	<0.1	<0.1	<0.1	<0.1	_	-	_
PFTeDA	<0.5	-	-	_	<0.1	<0.1	<0.1	<0.1	_	-	-
PFDoDA	<0.05	<0.005	<0.001	-	<0.1	<0.1	<0.1	<0.1	_	-	_
FOSA	<0.02	<0.001	0.0032	0.004	<0.025	<0.025	<0.025	<0.025	_	-	-
MeFOSA	<0.5	<0.005	<0.005	-	<0.1	<0.1	<0.1	<0.1	_	-	_
MeFOSAA	-	<0.005	<0.005	-	<0.025	<0.025	<0.025	<0.025	_	-	-
EtFOSAA	-	<0.005	<0.005	_	<0.025	<0.025	<0.025	<0.025	_	-	-
4:2 FTS	-	<0.005	0.0054	0.0031	<0.025	<0.025	<0.025	<0.025	_	_	-
6:2 FTS	5.6	0.88	1.6	0.86	0.45	0.45	1.1	0.53	_	-	-
8:2 FTS	<0.1	0.036	0.077	0.066	<0.1	<0.1	<0.1	<0.1	-	_	-
10:2 FTS	-	-	-	-	-	<0.025	<0.025	<0.025	-	-	_
FPrPA	-	-	-	-	_	<0.1	<0.1	<0.1	-	-	_
EtFOSA	<0.05	<0.005	<0.005	_	<0.1	<0.1	<0.1	<0.1		_	_
EtFOSE	<0.5	<0.005	<0.005	-	<0.1	<0.1	<0.1	<0.1	-	-	-
FPePA	-	-	-	-	-	<0.025	<0.025	<0.025	-	-	-
FHpPA	-	-	-	-	-	<0.025	<0.025	<0.025	-	-	-
F-53B minor	-	-	-	-	-	<0.05	<0.05	<0.05	-	-	-
HFPO-DA	-	-	-	-	-	<0.05	<0.05	<0.05	-	-	-
Sum F-53B	-	-	-		-	<0.1	<0.1	<0.1	1		-
ADONA	-			-	-	<0.025	<0.025	<0.025	1		-
P37DMOA	-	-	· ·	-	-	<0.025	<0.025	<0.025	-	-	-
F-53B major	-	-	· ·	-	-	<0.05	<0.05	<0.05	-		-
1-336 major	-		-			VU.1	VU.1	\U.1		<u> </u>	

1. Results in µg/L.
2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAS Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)  $^{\mathrm{1}}$ 

				PFAS in Groundwater						Guidelines	
Sample Name	OHA_FTA_MW4_9_270922	OHA_MW4_030423	OHA_MW4_071123	OHA_MW4_090424	MW6	MW6	MW6	OHA_MW6			
Location	MW4	MW4	MW4	MW4	MW6	MW6	MW6	MW6		ANZ WOC 00% Species Protection	ANZ WQG 95% Species Protection
Sample Date	27/09/2022	3/04/2023	7/11/2023	9/04/2024	20/04/2017	1/08/2017	31/10/2017	22/02/2018	NZ Drinking Water Standard, MoH	Technical Draft Default Guideline	Technical Draft Default Guideline
Lab Report Number	3008321	3276254	3518235	24-100824-1	1327497	841470	937355	1055089	2022 <sup>2</sup>	Values 3	Values 3
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base		values	values
Sample Results				-					7		
PFPrS	<0.025	<0.025	<0.025	<0.025	0.11	0.21	0.66	0.17	-	-	-
PFBS	0.032	0.032	0.025	0.027	0.56	0.76	1.8	0.43	-	-	-
PFPeS	0.045	0.036	0.038	0.031	0.81	0.81	2.3	0.66	-	-	-
di-PFHxS	<0.025	<0.025	<0.025	<0.025	0.014	0.02	0.052	0.025	-	-	-
Mono-PFHxS	0.11	0.077	0.077	0.060	1.1	1.9	4.1	1.8	-	-	-
L-PFHxS	0.62	0.54	0.43	0.37	5.3	8.1	22	4.1	-	-	-
Total PFHxS <sup>4</sup>	0.73	0.62	0.51	0.43	6.4	10	26	5.9	-	-	-
PFHpS	<0.025	<0.025	<0.025	<0.025	0.34	0.6	0.49	0.38	-	-	-
di-PFOS	0.026	0.03	<0.025	<0.025	0.31	0.23	0.27	0.39	-	-	-
Mono-PFOS	0.72	0.59	0.58	0.37	4.9	2.8	2.4	3.3	-	-	-
L-PFOS	1.3	1.3	1.3	0.79	6.6	5.9	3	4.5	-	-	-
Total PFOS <sup>4</sup>	2	1.9	1.9	1.2	<u>12</u>	8.9	5.7	<u>8.2</u>	-	0.0091 6	0.48 6
Sum of PFHxS and PFOS <sup>5</sup>	2.7	2.5	2.4	1.6	18	-	-	14	0.07	-	-
PFECHS	<0.025	<0.025	<0.025	<0.025	-	-	-	-	-	-	-
PFBA	0.24	0.17	0.20	0.14	1.1	1.1	1.3	0.66	-	-	-
PFPeA	0.95	0.66	0.78	0.50	3.6	4	6.8	2.5	-	-	-
PFHxA	0.61	0.44	0.51	0.35	2.8	4.4	7	2	-	-	-
PFHpA	0.36	0.24	0.26	0.17	0.9	1.5	2.5	0.93	-	-	-
PFOA	0.37	0.3	0.26	0.16	1.3	1.8	1.7	0.89	0.56	19	220
PFNA	0.23	0.17	0.17	0.098	0.75	0.86	0.37	0.66	-	-	
PFDA	<0.025	<0.025	<0.025	<0.025	0.016	0.029	0.013	0.012	-	-	-
PFUnDA	<0.025	<0.025	<0.025	<0.025	-	0.0057	0.0043	<0.005	-	-	-
PFTrDA	<0.1	<0.1	<0.10	<0.10	-	-	-	-	-	-	-
PFTeDA	<0.1	<0.1	<0.10	<0.10	-	-	-	-	-	-	-
PFDoDA	<0.1	<0.1	<0.10	<0.10	-	<0.005	<0.001	-	-	-	
FOSA	<0.025	<0.025	<0.025	<0.025	0.0014	<0.001	<0.001	0.0085	-	-	-
MeFOSA	<0.1	<0.1	<0.10	<0.10	-	<0.005	<0.005	-	-	-	-
MeFOSAA	<0.025	<0.025	<0.025	<0.025	-	<0.005	<0.005	<0.005	-	-	-
EtFOSAA	<0.025	<0.025	<0.025	<0.025	-	<0.005	<0.005	<0.005	-	-	-
4:2 FTS	<0.025	<0.025	<0.025	<0.025	<0.001	<0.005	<0.005	<0.005	-	-	-
6:2 FTS	0.73	0.4	0.46	0.29	0.53	0.74	0.33	1.7	-	-	-
8:2 FTS	<0.1	<0.1	<0.10	<0.10	0.0089	0.0064	<0.005	0.04	-	-	-
10:2 FTS	<0.025	<0.025	<0.025	<0.025	-	-	-	-	-	-	-
FPrPA	<0.1	<0.1	<0.10	<0.10	-	-	-	-	-	-	-
EtFOSA	<0.1	<0.1	<0.10	<0.10	-	<0.005	<0.005	-	-	-	-
EtFOSE	<0.1	<0.1	<0.10	<0.10	-	<0.005	<0.005	<0.025	-	-	-
FPePA	<0.025	<0.025	<0.025	<0.025	-	-	-	-	-	-	-
FHpPA	<0.025	<0.025	<0.025	<0.025	-	-	-	-	-	-	-
F-53B minor	<0.05	<0.05	<0.050	<0.050	-	-	-	-	-	-	-
HFPO-DA	<0.05	<0.05	<0.050	<0.050	-	-	-	-	-	-	-
Sum F-53B	<0.1	<0.1	<0.10	<0.10	-	-	-	-	-	-	-
ADONA	<0.025	<0.025	<0.025	<0.025	-	-	-	-	-	-	-
P37DMOA	<0.05	<0.05	<0.050	<0.050	-	-	-	-	-	-	-
F-53B major	<0.1	<0.1	<0.10	<0.10	-	-	-	_	-	_	_

1. Results in µg/L.
2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAS Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)  $^{\mathrm{1}}$ 

				PFAS in Groundwater						Guidelines	
Sample Name	MW6	OHA RUP MW6 6 300920	OHA RUP MW6 7 170321	OHA RUP MW6 8 271021	OHA RUP MW6 9 300322	OHA RUP MW6 10 270922	OHA MW6 030423	OHA MW6 071123			
Location	MW6	MW6	MW6	MW6	MW6	MW6	MW6	MW6		ANZ WOO 000/ Curries Bushashing	ANZIMOS OFO/ Secrice Breatestics
Sample Date	4/07/2018	30/09/2020	17/03/2021	27/10/2021	30/03/2022	27/09/2022	3/04/2023	7/11/2023	NZ Drinking Water Standard, MoH	Technical Draft Default Guideline	ANZ WQG 95% Species Protection Technical Draft Default Guideline
Lab Report Number	1186580	2132127	2314824	2590573	2788509	3008307	3276245	3518293	2022 <sup>2</sup>	Values 3	Values 3
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base		values	values
Sample Results									7		
PFPrS	0.22	0.063	0.028	0.1	0.053	0.16	0.03	0.065	-	-	-
PFBS	0.72	0.22	0.11	0.33	0.19	0.46	0.11	0.25	-	-	-
PFPeS	0.77	0.26	0.12	0.38	0.24	0.64	0.12	0.30	-	-	-
di-PFHxS	0.015	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	-	-	-
Mono-PFHxS	1.7	0.62	0.25	0.77	0.57	1.3	0.28	0.69	-	-	-
L-PFHxS	11	4.2	1.6	5.7	3.8	7.7	2	4.6	-	-	-
Total PFHxS <sup>4</sup>	13	4.8	1.8	6.5	4.4	9	2.3	5.3	-	-	-
PFHpS	0.34	0.15	0.06	0.24	0.15	0.24	0.087	0.17	-	-	-
di-PFOS	0.27	0.13	0.075	0.18	0.15	0.17	0.097	0.12	-	-	-
Mono-PFOS	4.5	2.9	1.1	2.7	2.5	2.3	1.7	2.6	-	-	-
L-PFOS	9.7	6.5	1.7	4.6	5.5	3.4	3.3	4.8	-	-	-
Total PFOS <sup>4</sup>	14	9.5	2.9	7.5	8.2	5.9	<u>5.1</u>	7.5	-	0.0091 <sup>6</sup>	0.48 6
Sum of PFHxS and PFOS <sup>5</sup>	27	14	4.7	14	13	15	7.4	13	0.07	-	-
PFECHS	-	-	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	-	-	-
PFBA	1.2	1.4	0.35	0.57	0.57	0.61	0.37	0.53	-	-	-
PFPeA	4.1	3.2	1.1	1.7	2	2.2	1.1	1.6	-	-	-
PFHxA	4	2.2	0.78	1.6	1.4	2.2	0.78	1.4	-	-	-
PFHpA	1.9	1	0.37	0.69	0.63	0.9	0.39	0.63		-	-
PFOA	2.2	1.1	0.35	0.97	0.68	1	0.45	0.84	0.56	19	220
PFNA	1.3	0.75	0.28	0.61	0.55	0.49	0.41	0.50	-	-	
PFDA	0.045	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	-	-	-
PFUnDA		<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	-	-	-
PFTrDA	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	-	-	-
PFTeDA	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	-	-	-
PFDoDA	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	-	-	
FOSA	<0.001	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025		-	-
MeFOSA	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	-	-	-
MeFOSAA	-	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025		-	-
EtFOSAA	-	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	-	-	-
4:2 FTS	<0.001	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	-	-	-
6:2 FTS	0.46	0.23	0.84	<1	0.78	0.32	0.32	0.28		-	-
8:2 FTS	0.0069	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	-	-	-
10:2 FTS	-	-	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	-	-	-
FPrPA	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	-	-	-
EtFOSA	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	-	-	-
EtFOSE	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10		-	-
FPePA	-	-	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025		-	-
FHpPA	-	-	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025		-	-
F-53B minor	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050	-	-	-
HFPO-DA	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050	-	-	-
Sum F-53B	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10		-	-
ADONA		-	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	-	-	-
P37DMOA	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.050	-	-	-
F-53B major	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10			-

1. Results in μg/L.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)  $^{\mathrm{1}}$ 

				PFAS in Groundwater						Guidelines	
Sample Name	OHA MW6 090424	OHA BAI GW111.1 1 170321	OHA BAI GW111.1 2 281021	OHA_BAI_GW111.1_3_300322	OHA BAI GW111.1 4 280922	OHA GW111.1 040423	OHA GW111.1 101123	OHA GW111.1 100424			
Location	MW6	GW111.1	GW111.1	GW111.1	GW111.1	GW111.1	GW111.1	GW111.1	7		<u>-</u>
Sample Date	9/04/2024	17/03/2021	28/10/2021	30/03/2022	28/09/2022	4/04/2023	10/11/2023	10/04/2024	NZ Drinking Water Standard, MoH	1	ANZ WQG 95% Species Protection
Lab Report Number	24-100834-1	2390370	2593741	2787340	3021350	3288820	3521624	24-102486-1	2022 2	Technical Draft Default Guideline	l .
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base	-	Values <sup>3</sup>	Values <sup>3</sup>
Sample Results									7		
PFPrS	<0.025	<0.025	<0.025	0.0023	0.0031	0.0019	0.0017	0.0017	-		
PFBS	0.075	<0.025	<0.025	0.0083	0.011	0.0073	0.0068	0.0064	-	-	
PFPeS	0.095	<0.025	<0.025	0.0083	0.014	0.0068	0.0062	0.0065	_	_	_
di-PFHxS	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	_
Mono-PFHxS	0.22	<0.025	0.032	0.012	0.03	0.012	0.014	0.011	-	-	-
L-PFHxS	1.5	0.083	0.2	0.076	0.14	0.072	0.078	0.068	<del>                                     </del>	_	_
Total PFHxS <sup>4</sup>	1.7	0.083	0.23	0.088	0.17	0.084	0.078	0.008	<del>                                     </del>	-	-
PFHpS	0.066	<0.025	<0.025	0.0022	0.0045	0.0018	0.0018	0.0018	<u> </u>	-	-
di-PFOS	0.056	<0.025	<0.025	0.0022	0.0043	0.0018	0.0018	0.0018	1 - 1		
Mono-PFOS	0.056	0.025	0.025	0.0036	0.0061	0.0032	0.0043	+	<u> </u>	-	
								0.053			
L-PFOS	1.8	0.05	0.21	0.14	0.14	0.063	0.081	0.080	-	6	6
Total PFOS <sup>4</sup>	<u>2.7</u>	0.085	0.36	0.2	0.23	0.11	0.14	0.14		0.0091 6	0.48 6
Sum of PFHxS and PFOS <sup>5</sup>	4.4	0.17	0.59	0.29	0.4	0.19	0.23	0.22	0.07	-	-
PFECHS	<0.025	<0.025	<0.025	<0.001	<0.001	-	<0.0010	<0.0050	-	-	-
PFBA	0.32	0.11	0.15	0.079	0.11	0.07	0.082	0.087	-	-	-
PFPeA	1.0	0.39	0.86	0.26	0.53	0.24	0.28	0.29	-	-	-
PFHxA	0.64	0.28	0.47	0.2	0.33	0.16	0.19	0.19	-	-	-
PFHpA	0.27	0.15	0.17	0.092	0.16	0.08	0.099	0.10	-	-	-
PFOA	0.27	0.073	0.13	0.064	0.084	0.052	0.069	0.070	0.56	19	220
PFNA	0.21	<0.025	0.048	0.017	0.044	0.015	0.015	0.015	-	-	-
PFDA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
PFUnDA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
PFTrDA	<0.10	<0.1	<0.1	<0.001	-	-	<0.0020	<0.0010	-	-	-
PFTeDA	<0.10	<0.1	<0.1	-	<0.001	<0.001	<0.0010	<0.0010	-	-	-
PFDoDA	<0.10	<0.1	<0.1	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
FOSA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
MeFOSA	<0.10	<0.1	<0.1	<0.001	<0.001	<0.001	-	<0.0010	-	-	-
MeFOSAA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
EtFOSAA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
4:2 FTS	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-		
5:2 FTS	0.46	<0.05	0.15	0.012	0.25	0.0035	0.0087	0.0023	-		
B:2 FTS	<0.10	<0.1	<0.1	<0.001	0.0032	<0.001	<0.0010	<0.0010	-		
10:2 FTS	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	-	<0.0010	-	-	-
FPrPA	<0.10	<0.1	<0.1	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
EtFOSA	<0.10	<0.1	<0.1	<0.001	<0.001	<0.001	-	<0.0010	<del>                                     </del>	_	_
EtFOSE	<0.10	<0.1	<0.1	<0.001	<0.001	<0.001	_	<0.0010	<u> </u>	_	_
FPePA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	1 -	-	-
FHpPA	<0.025	<0.025	<0.025	<0.001	<0.001	-	<0.0010	<0.0010	<del>-</del>		-
F-53B minor	<0.025	<0.05	<0.05	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
HFPO-DA		<0.05	<0.05	<0.001	<0.001	<0.001			<del>                                     </del>		
Sum F-53B	<0.050	<0.05	<0.05	<0.001	<0.001	<0.001	<0.0010	<0.0010		-	-
	<0.10						<0.0010	<0.0010	-	-	-
ADONA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
P37DMOA	<0.050	<0.05	<0.05	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
F-53B major	<0.10	<0.1	<0.1	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-

1. Results in µg/L.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAS Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

## Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) $^{\mathrm{1}}$

				PFAS in Groundwater						Guidelines	
Sample Name	OHA_BAI_GW111.2_1_040221	OHA_BAI_GW111.2_2_170321	OHA_BAI_GW111.2_3_281021	OHA_BAI_GW111.2_4_300322	OHA_BAI_GW111.2_5_270922	OHA_GW111.2_040423	OHA_GW111.2_101123	OHA_GW111.2_100424			
Location	GW111.2	GW111.2	GW111.2	GW111.2	GW111.2	GW111.2	GW111.2	GW111.2		ANZ WOC 00% Species Protection	ANZ WQG 95% Species Protection
Sample Date	4/02/2021	17/03/2021	28/10/2021	30/03/2022	28/09/2022	4/04/2023	10/11/2023	10/04/2024	NZ Drinking Water Standard, MoH	Technical Draft Default Guideline	Technical Draft Default Guideline
Lab Report Number	2256089	2390370	2593741	2787340	3021350	3288820	3521624	24-102486-2	2022 <sup>2</sup>	Values <sup>3</sup>	Values 3
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base		values	values
Sample Results									7		
PFPrS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
PFBS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
L-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
Total PFHxS <sup>4</sup>	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
Mono-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
L-PFOS	<0.001	<0.001	0.0012	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
Total PFOS <sup>4</sup>	<0.001	<0.001	0.0012	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	0.0091 6	0.48 <sup>6</sup>
Sum of PFHxS and PFOS <sup>5</sup>	<0.001	<0.001	0.0012	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.07	-	-
PFECHS	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.0010	<0.0020	-	-	-
PFBA	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.0010	<0.0010	-	-	-
PFPeA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0021	0.0016	-	-	-
PFHxA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0012	<0.0010	-	-	-
PFHpA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
PFOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.56	19	220
PFNA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
PFUnDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
PFTrDA	-	-	-	-	-	-	<0.0020	<0.0010	-	-	-
PFTeDA	-	-	-	<0.001	-	-	<0.0010	-	-	-	-
PFDoDA	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
MeFOSA	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-
MeFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
EtFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
4:2 FTS	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
6:2 FTS	<0.001	<0.001	0.0024	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
8:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
10:2 FTS	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	<0.0010		-	-
FPrPA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
EtFOSA	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-		-	-
EtFOSE	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	<0.0010	-	-	-
FPePA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010		-	-
FHpPA	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.0010	<0.0010		-	-
F-53B minor	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
HFPO-DA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
Sum F-53B	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-
ADONA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	_	_
P37DMOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-		_
F-53B major	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	_

# Notes:

1. Results in µg/L.
2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAS Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)  $^{\mathrm{1}}$ 

				PFAS in Groundwater						Guidelines	
Sample Name	OHA_BAI_GW111.3_1_170321	OHA_BAI_GW111.3_2_281021	OHA_BAI_GW111.3_3_300322	OHA_BAI_GW111.3_4_270922	OHA_GW111.3_040423	OHA_GW111.3_101123	OHA_GW111.3_100424	MW9			
Location	GW111.3	GW111.3	GW111.3	GW111.3	GW111.3	GW111.3	GW111.3	MW9		ANZ MOS 00% Supplies Bushashian	ANZIMOS OFO/ Secrice Backertica
Sample Date	17/03/2021	28/10/2021	30/03/2022	27/09/2022	4/04/2023	10/11/2023	10/04/2024	20/04/2017	NZ Drinking Water Standard, MoH	Technical Draft Default Guideline	ANZ WQG 95% Species Protection Technical Draft Default Guideline
Lab Report Number	2390370	2593741	2787340	3021350	3288820	3521624	24-102486-3	1327497	2022 <sup>2</sup>	Values 3	
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base		values	Values <sup>3</sup>
Sample Results	·								$\neg$		
PFPrS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.019	-	-	-
PFBS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.12	-	-	-
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.16	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.003	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.21	-	-	-
L-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	1.5	-	-	-
Total PFHxS <sup>4</sup>	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	1.7	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.072	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.055	-	-	-
Mono-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.62	-	-	-
L-PFOS	<0.001	0.0021	0.0027	<0.001	<0.001	<0.0010	<0.0010	0.52	-	-	-
Total PFOS <sup>4</sup>	<0.001	0.0021	0.0027	<0.001	<0.001	<0.0010	<0.0010	<u>1.2</u>	-	0.0091 6	0.48 6
Sum of PFHxS and PFOS <sup>5</sup>	<0.001	0.0021	0.0027	<0.001	<0.001	<0.0010	<0.0010	2.9	0.07	-	-
PFECHS	<0.001	<0.001	<0.001	<0.001	-	<0.0010	<0.0020	-	-	-	-
PFBA	<0.001	<0.001	-	<0.001	<0.001	<0.0010	<0.0010	0.69	-	-	-
PFPeA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	3.5	-	-	-
PFHxA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	1.8	-	-	-
PFHpA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	1		-	-
PFOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.67	0.56	19	220
PFNA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.36	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.0014	-	-	-
PFUnDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-
PFTrDA	-	-	-	-	-	-	<0.0010	-	-	-	-
PFTeDA	-	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	-	-
PFDoDA	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.0010	-	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	-	-	-
MeFOSA	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-
MeFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-
EtFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-
4:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.012	-	-	-
6:2 FTS	<0.001	0.0037	<0.001	<0.001	<0.001	<0.0010	<0.0010	1.9	-	-	-
8:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.0035	-	-	-
10:2 FTS	-	<0.001	<0.001	<0.001	<0.001	-	<0.0010	-	-	-	-
FPrPA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-
EtFOSA	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-
EtFOSE	-	<0.001	<0.001	<0.001	<0.001	-	<0.0010	-	-	-	-
FPePA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-
FHpPA	<0.001	<0.001	<0.001	<0.001	-	<0.0010	<0.0010	-	-	-	-
F-53B minor	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.0010		-	-	-
HFPO-DA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-
Sum F-53B	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-
ADONA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010			-	-
P37DMOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-
F-53B major	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0020	-	-		-

1. Results in µg/L.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAS Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)  $^{\mathrm{1}}$ 

				PFAS in Groundwater						Guidelines	
Sample Name	MW9	OHA MW9	MW9	OHA DTK MW9 5 300920	OHA DTK MW9 6 180321	OHA DTK MW9 7 271021	OHA DTK MW9 8 300322	OHA DTK MW9 9 270922			
Location	MW9	MW9	MW9	MW9	MW9	MW9	MW9	MW9	1	<u>-</u>	I
Sample Date	1/11/2017	20/02/2018	4/07/2018	30/09/2020	18/03/2021	27/10/2021	30/03/2022	27/09/2022	NZ Drinking Water Standard, MoH	Technical Draft Default Guideline	ANZ WQG 95% Species Protection
Lab Report Number	937355	1055089	1186581	2132127	2314824	2590573	2786745	3019529	2022 <sup>2</sup>	Values 3	Technical Draft Default Guideline Values <sup>3</sup>
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base	1	values	values
Sample Results				·					1		
PFPrS	0.018	0.031	0.0091	<0.025	<0.025	<0.025	0.022	0.0094	-	-	-
PFBS	0.072	0.093	0.028	0.034	0.064	0.046	0.049	0.02	-	-	-
PFPeS	0.11	0.14	0.043	0.038	0.069	0.057	0.074	0.029	-	-	-
di-PFHxS	0.0025	0.003	<0.001	<0.025	<0.025	<0.025	0.0015	<0.001	-	-	-
Mono-PFHxS	0.16	0.26	0.058	0.071	0.14	0.1	0.14	0.053	-	-	-
L-PFHxS	1.1	1.3	0.42	0.47	0.91	0.79	0.89	0.42	-	-	-
Total PFHxS <sup>4</sup>	1.3	1.6	0.48	0.54	1	0.89	1	0.47	-	-	-
PFHpS	0.06	0.071	0.021	<0.025	0.034	0.029	0.042	0.02	-	-	-
di-PFOS	0.057	0.078	0.013	<0.025	0.045	0.042	0.049	0.023	-	-	-
Mono-PFOS	0.46	0.72	0.18	0.19	0.52	0.46	0.55	0.32	-	-	-
L-PFOS	0.31	0.58	0.19	0.24	0.46	0.53	0.59	0.34	-	-	-
Total PFOS <sup>4</sup>	0.83	1.4	0.38	0.43	1	1	1.2	0.68	-	0.0091 <sup>6</sup>	0.48 6
Sum of PFHxS and PFOS <sup>5</sup>	-	3	0.86	0.97	2	1.9	2.2	1.2	0.07	-	-
PFECHS	-	-	-	-	<0.025	<0.025	<0.001	<0.001	-	-	-
PFBA	0.57	0.54	0.45	0.57	0.51	0.52	0.59	0.39	-	-	-
PFPeA	2.9	2.6	1.7	2.1	2.3	2	2.1	1	-	-	-
PFHxA	1.5	1.5	0.92	1	1.3	1	1.1	0.49	-	-	-
PFHpA	0.57	0.68	0.44	0.43	0.56	0.49	0.56	0.29	-	-	-
PFOA	0.52	0.67	0.36	0.33	0.48	0.47	0.51	0.3	0.56	19	220
PFNA	0.34	0.41	0.23	0.13	0.26	0.26	0.28	0.21	-	-	-
PFDA	<0.001	<0.001	0.0011	<0.025	<0.025	<0.025	0.0015	0.0013	-	-	-
PFUnDA	<0.001	<0.005	<0.001	<0.025	<0.025	<0.025	<0.001	<0.001	-	-	-
PFTrDA	-	-	<0.025	<0.1	<0.1	<0.1	<0.001	-	-	-	-
PFTeDA	-	-	<0.1	<0.1	<0.1	<0.1	<0.001	-	-	-	-
PFDoDA	<0.001	-	<0.025	<0.1	<0.1	<0.1	<0.001	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.025	<0.025	<0.025	<0.001	<0.001	-	-	-
MeFOSA	<0.005	-	<0.005	<0.1	<0.1	<0.1	<0.001	<0.001	-	-	-
MeFOSAA	<0.005	<0.005	<0.001	<0.025	<0.025	<0.025	<0.001	<0.001	-	-	-
EtFOSAA	<0.005	<0.005	<0.001	<0.025	<0.025	<0.025	<0.001	<0.001	-	-	-
4:2 FTS	0.0095	0.011	0.004	<0.025	<0.025	<0.025	0.0018	-	-	-	-
6:2 FTS	3.6	1.7	1.5	1.1	3.2	2.3	2.6	0.98	-	-	-
8:2 FTS	<0.005	<0.005	0.0022	<0.1	<0.1	<0.1	0.0043	0.0027	-	-	-
10:2 FTS	-	-	-	-	<0.025	<0.025	<0.001	<0.001	-	-	-
FPrPA	-	-	-	-	<0.1	<0.1	<0.001	<0.001	-	-	-
EtFOSA	<0.005	-	<0.005	<0.1	<0.1	<0.1	<0.001	<0.001	-	-	-
EtFOSE	<0.005	<0.025	<0.005	<0.1	<0.1	<0.1	<0.001	<0.001	-	-	-
FPePA	-	-	-	-	<0.025	<0.025	0.0032	0.0029	-	-	-
FHpPA	-	-	-	-	<0.025	<0.025	<0.001	<0.001	-	-	-
F-53B minor	-	-	-	-	<0.05	<0.05	<0.001	<0.001	-	-	-
HFPO-DA	-	-	-	-	<0.05	<0.05	<0.001	<0.001	-	-	-
Sum F-53B	-	-	-	-	<0.1	<0.1	<0.001	<0.001	-	-	-
ADONA	-	-	-	-	<0.025	<0.025	<0.001	<0.001	-	-	-
P37DMOA	-	-	-	-	<0.05	<0.05	<0.001	<0.001	-	-	-
F-53B major	-	-	-	-	<0.1	<0.1	<0.001	<0.001	-	-	-

1. Results in µg/L

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAS Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)  $^{\mathrm{1}}$ 

				PFAS in Groundwater						Guidelines	
Sample Name	OHA MW9 030423	OHA MW9 071123	OHA MW9 090424	OHA WS1	WS01	WS1	OHA FTA WS1 4 290920	OHA FTA WS1 5 170321			
Location	MW9	MW9	MW9	WS1	WS1	WS1	WS1	WS1	7		
Sample Date	3/04/2023	7/11/2023	9/04/2024	19/02/2018	3/07/2018	21/07/2018	29/09/2020	17/03/2021	NZ Drinking Water Standard, MoH	Technical Draft Default Guideline	ANZ WQG 95% Species Protection Technical Draft Default Guideline
Lab Report Number	3276265	3518232	24-100846-1	1055089	1186578	1326866	2096316	2318531	2022 2	Values 3	Values 3
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base	7	values	values
Sample Results									7		
PFPrS	<0.025	<0.025	<0.025	0.01	0.0098	0.0097	0.012	0.013	-	-	-
PFBS	0.045	0.036	0.035	0.022	0.024	0.023	0.026	0.026	-	-	-
PFPeS	0.048	0.034	0.044	0.02	0.021	0.023	0.023	0.024	-	-	-
di-PFHxS	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	0.09	0.077	0.087	0.027	0.029	0.03	0.035	0.033	-	-	-
L-PFHxS	0.72	0.50	0.63	0.11	0.12	0.12	0.12	0.13	-	-	-
Total PFHxS <sup>4</sup>	0.81	0.58	0.72	0.14	0.15	0.15	0.16	0.16	-	-	-
PFHpS	0.03	<0.025	0.034	0.0022	0.0026	0.0034	0.0023	0.0018	-	-	-
di-PFOS	0.039	<0.025	0.034	0.0029	0.0031	0.0024	0.0041	0.0029	-	-	-
Mono-PFOS	0.45	0.33	0.36	0.02	0.022	0.013	0.021	0.019	-	-	-
L-PFOS	0.56	0.39	0.32	0.0077	0.011	0.0071	0.0073	0.011	-	-	-
Total PFOS <sup>4</sup>	1	0.72	0.71	0.031	0.036	0.022	0.032	0.033	-	0.0091 <sup>6</sup>	0.48 6
Sum of PFHxS and PFOS <sup>5</sup>	1.8	1.3	1.4	0.17	0.19	0.17	0.19	0.19	0.07	-	-
PFECHS	<0.025	<0.025	<0.025	-	-	-	-	<0.001	-	-	-
PFBA	0.4	0.40	0.45	0.019	0.018	0.018	0.018	0.018	-	-	-
PFPeA	1.5	1.3	1.5	0.11	0.1	0.1	0.093	0.089	-	-	-
PFHxA	0.85	0.68	0.80	0.09	0.092	0.097	0.088	0.082	-	-	-
PFHpA	0.45	0.34	0.39	0.028	0.027	0.025	0.029	0.03		-	-
PFOA	0.45	0.33	0.33	0.02	0.022	0.018	0.021	0.024	0.56	19	220
PFNA	0.27	0.20	0.19	0.0064	0.0078	0.0056	0.0062	0.0065		-	-
PFDA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFUnDA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFTrDA	<0.1	<0.10	<0.10	-	<0.025	-	-	-	-	-	-
PFTeDA	<0.1	<0.10	<0.10	-	<0.1	-	-	-	-	-	-
PFDoDA	<0.1	<0.10	<0.10	-	<0.025	<0.005	<0.001	<0.001	-	-	-
FOSA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.1	<0.10	<0.10	<0.005	-	<0.005	<0.001	-	-	-	-
MeFOSAA	<0.025	<0.025	<0.025	<0.005	<0.001	<0.005	<0.001	<0.001		-	-
EtFOSAA	<0.025	<0.025	<0.025	<0.005	<0.001	<0.005	<0.001	<0.001	-	-	-
4:2 FTS	<0.025	<0.025	<0.025	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-
6:2 FTS	1.7	1.2	1.6	0.12	0.11	0.12	0.089	0.1	-	-	-
8:2 FTS	<0.1	<0.10	<0.10	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	<0.025	<0.025	<0.025	-	-	-	-	<0.001	-	-	-
FPrPA	<0.1	<0.10	<0.10	-	-	-	-	<0.001	-	-	-
EtFOSA	<0.1	<0.10	<0.10	<0.005	-	<0.005	<0.001	-		-	-
EtFOSE	<0.1	<0.10	<0.10	<0.005	-	<0.005	<0.001	-	-	-	-
FPePA	<0.025	<0.025	<0.025	-	-	-	-	<0.001	-	-	-
FHpPA	<0.025	<0.025	<0.025	-	-	-	-	<0.001	-	-	-
F-53B minor	<0.05	<0.050	<0.050	-	-	-	-	<0.001	-	-	-
HFPO-DA	<0.05	<0.050	<0.050	-	-	-	-	<0.001	-	-	-
Sum F-53B	<0.1	<0.10	<0.10	-	-	-	-	<0.001	-	-	-
ADONA	<0.025	<0.025	<0.025	-	-	-	-	<0.001	-	-	-
P37DMOA	<0.05	<0.050	<0.050	-	-	-	-	<0.001	-	-	-
F-53B major	<0.1	<0.10	<0.10	-	-	-	-	<0.001	-		

1. Results in µg/L.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAS Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value available
<u>0.3</u>	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)  $^{\mathrm{1}}$ 

				PFAS in Groundwater						Guidelines	
Sample Name	OHA_FTA_WS1_6_271021	OHA_FTA_WS1_7_290322	OHA_FTA_WS1_8_270922	OHA_WS1_040423	OHA_WS1_091123	OHA_WS1_100424	WS2-1	WS2			
Location	WS1	WS1	WS1	WS1	WS1	WS1	WS2	WS2		ANZIMOS 00% Sanaina Bantantina	ANZIMOS OFO/ Secrice Break-etics
Sample Date	27/10/2021	29/03/2022	27/09/2022	4/04/2023	9/11/2023	10/04/2024	24/07/2015	21/07/2017	NZ Drinking Water Standard, MoH	Technical Draft Default Guideline	ANZ WQG 95% Species Protection Technical Draft Default Guideline
Lab Report Number	2590573	2775976	3009068	3277679	3521601	24-103785-1	ES1526917	1326866	2022 <sup>2</sup>	Values 3	
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base		values	Values <sup>3</sup>
Sample Results											
PFPrS	<0.025	0.014	0.014	0.014	0.012	0.013	-	<0.001	-	-	-
PFBS	0.026	0.027	0.026	0.027	0.028	0.028	<0.02	<0.001	-	-	-
PFPeS	0.026	0.028	0.026	0.028	0.025	0.025	-	<0.001	-	-	-
di-PFHxS	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	-	-	-
Mono-PFHxS	0.037	0.034	0.034	0.036	0.042	0.036	-	<0.001	-	-	-
L-PFHxS	0.14	0.14	0.14	0.15	0.15	0.15	-	0.0038	-		-
Total PFHxS <sup>4</sup>	0.18	0.17	0.17	0.19	0.19	0.19	<0.02	0.0038	-		
PFHpS	<0.025	0.003	0.0028	0.0028	0.0030	0.0033	-	<0.001	-		
di-PFOS	<0.025	0.0032	0.0034	0.0041	0.0027	0.0037	-	<0.001	-	-	-
Mono-PFOS	<0.025	0.025	0.031	0.03	0.035	0.030	-	<0.001	-	-	-
L-PFOS	<0.025	0.013	0.017	0.0075	0.017	0.021	_	<0.001	-	-	-
Total PFOS <sup>4</sup>	<0.025	0.041	0.051	0.042	0.055	0.055	<0.02	<0.001		0.0091 6	0.48 6
Sum of PFHxS and PFOS <sup>5</sup>	0.18	0.21	0.22	0.23	0.24	0.24	-	0.0038	0.07	-	-
PFECHS	<0.025	<0.001	<0.001	-	<0.0020	<0.0020	-	0.0038	-	-	-
PFBA	<0.1	0.023	0.023	0.026	0.026	0.026		<0.005	-	_	-
PFPeA	0.11	0.11	0.023	0.020	0.14	0.14	-	0.0072	-	-	-
PFHxA	0.093	0.098	0.097	0.14	0.14	0.14	<0.02	0.0072			-
PFHpA	0.036	0.035	0.037	0.04	0.038	0.038	<0.02	0.002		-	-
PFOA	0.036	0.035	0.029	0.04	0.038	0.032	<0.02	0.002	0.56	19	220
		0.0084									
PFNA PFDA	<0.025 <0.025	<0.004	0.0097 <0.001	0.0082 <0.001	0.0097	0.011 <0.0010	<0.02	<0.001 <0.001	-	-	-
	<0.025		<0.001	<0.001	<0.0010	<0.0010	<0.02 <0.05	<0.001			-
PFUnDA		<0.001			<0.0010				-	-	-
PFTrDA	<0.1	-	-	-	-	<0.0010	<0.05	-	-	-	-
PFTeDA	<0.1	<0.001	-	-	<0.0010	-	<0.5		-	-	-
PFDoDA	<0.1	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.05	<0.005	-	-	-
FOSA	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.02	<0.001	-	-	-
MeFOSA	<0.1	<0.001	<0.001	<0.001	<0.0010	-	<0.5	<0.005	-	-	-
MeFOSAA	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.005	-	-	-
EtFOSAA	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.005	-	-	-
4:2 FTS	<0.025	0.0012	0.0012	0.0013	0.0013	0.0016	-	<0.001	-	-	-
6:2 FTS	<1	0.13	0.13	0.097	0.13	0.16	<0.1	<0.001	-	-	-
8:2 FTS	<0.1	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.1	<0.001	-	-	-
10:2 FTS	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-
FPrPA	<0.1	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-
EtFOSA	<0.1	<0.001	<0.001	<0.001	<0.0010	-	<0.05	<0.005	-	-	-
EtFOSE	<0.1	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.5	<0.005	-	-	-
FPePA	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-
FHpPA	<0.025	<0.001	<0.001	-	<0.0010	<0.0010	-	-	-	-	-
F-53B minor	<0.05	<0.001	<0.001	-	<0.0010	<0.0010	-	-	-	-	-
HFPO-DA	<0.05	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-
Sum F-53B	<0.1	<0.001	<0.001	-	<0.0020	<0.0020	-	-	-	-	-
ADONA	<0.025	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-
P37DMOA	<0.05	<0.001	<0.001	-	-	<0.0010	-	-	-	-	-
F-53B major	<0.1	<0.001	<0.001	-	<0.0020	<0.0020	-	-	-	-	-

1. Results in μg/L.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAS Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)  $^{\mathrm{1}}$ 

				PFAS in Groundwater						Guidelines	
Sample Name	OHA_WS2	WS02	OHA_QRY_WS2_5_221119	OHA_QRY_WS2_6_020620	OHA_QRY_WS2_7_290920	OHA_QRY_WS2_8_181120	OHA_QRY_WS2_9_180321	OHA_QRY_WS2_10_220621			
Location	WS2	WS2	WS2	WS2	WS2	WS2	WS2	WS2		ANZ WOG 00% Species Protection	ANZ WQG 95% Species Protection
Sample Date	21/02/2018	3/07/2018	22/11/2019	2/06/2020	29/09/2020	18/11/2020	18/03/2021	22/06/2021	NZ Drinking Water Standard, MoH	Technical Draft Default Guideline	•
Lab Report Number	1055089	1186581	1740590	1983524	2096325	2172205	2327922	2434042	2022 <sup>2</sup>	Values <sup>3</sup>	Values <sup>3</sup>
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base		values	values
Sample Results											
PFPrS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBS	<0.001	0.0011	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	<0.001	0.0011	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	0.0033	0.0053	0.0031	0.0021	0.0024	0.0041	0.0029	0.0027	-	-	-
Total PFHxS <sup>4</sup>	0.0033	0.0064	0.0031	0.0021	0.0024	0.0041	0.0029	0.0027	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	0.001	0.0016	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFOS	<0.001	0.0025	<0.001	0.0011	0.0016	<0.001	<0.001	<0.001	-	-	-
Total PFOS <sup>4</sup>	0.001	0.0041	<0.001	0.0011	0.0016	<0.001	<0.001	<0.001	-	0.0091 6	0.48 6
Sum of PFHxS and PFOS <sup>5</sup>	0.0043	0.01	0.0031	0.0032	0.004	0.0041	0.0029	0.0027	0.07	-	-
PFECHS	-	-	-	-	-	-	<0.001	<0.001	-	-	-
PFBA	<0.005	<0.005	0.0033	<0.005	0.0029	0.0035	0.0034	<0.005	-	-	-
PFPeA	0.0049	0.0076	0.0043	0.0027	0.0025	0.0041	0.004	0.0032	-	-	-
PFHxA	0.0031	0.0055	0.0031	0.0017	0.0016	0.003	0.0026	0.002	-	-	-
PFHpA	0.0017	0.0028	0.0016	0.0011	<0.001	0.0019	0.0015	0.0014	-	-	-
PFOA	0.0014	0.0024	0.0012	0.0036	<0.001	0.0015	0.0012	0.0013	0.56	19	220
PFNA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFUnDA	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	-	-	-
PFTrDA	-	-	<0.001	<0.001	-	-	-	<0.001	-	-	-
PFTeDA	-	-	<0.001	<0.001	-	-	-	-	-	-	-
PFDoDA	-	-	<0.001	<0.001	<0.001	-	-	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.005	-	<0.001	<0.001	-	-	<0.001	<0.001	-	-	-
MeFOSAA	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
6:2 FTS	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
8:2 FTS	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
10:2 FTS	-	-	-	-	-	-	-	<0.001	-	-	-
FPrPA	-	-	-	-	-	-	<0.001	<0.001	-	-	-
EtFOSA	<0.005	-	<0.001	<0.001	-	-	-	<0.001	-	-	-
EtFOSE	<0.005	<0.005	<0.001	<0.001	-	<0.001	-	<0.001	-	-	-
FPePA	-	-	-	-	-	-	<0.001	<0.001	-	-	-
FHpPA	-	-	-	-	-	-	<0.001	<0.001	-	-	-
F-53B minor	-	-	-	-	-	-	<0.001	<0.001	-	-	-
HFPO-DA	-	-	-	-	-	-	<0.001	<0.001	-	-	-
Sum F-53B	-	-	-	-	-	-	<0.001	<0.001	-	-	-
ADONA	-	-	-	-	-	-	<0.001	<0.001	-	-	-
P37DMOA	-	-	-	-	-	-	<0.001	<0.001	-	-	-
F-53B major	-	-	-	-	-	-	<0.001	<0.001	-	-	-

1. Results in μg/L.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAS Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)  $^{\mathrm{1}}$ 

				PFAS in Groundwater					1	Guidelines	
Sample Name	OHA QRY WS2 11 281021	OHA QRY WS2 12 300322	OHA QRY WS2 14 280922	OHA WS2 040423	OHA WS2 081123	OHA WS2 100424	OHA ADJ GW106 1 160321	OHA ADJ GW106 2 291021			
Location	WS2	WS2	WS2	WS2	WS2	WS2	GW106	GW106	1		<u>-</u>
Sample Date	28/10/2021	30/03/2022	28/09/2022	4/04/2023	8/11/2023	10/04/2024	16/03/2021	29/10/2021	NZ Drinking Water Standard, MoH	1	ANZ WQG 95% Species Protection
Lab Report Number	2593734	2786751	3019773	3277677	3519860	24-103788-1	2316433	2590583	2022 2	Technical Draft Default Guideline	l .
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	Off-base	Off-base	-	Values <sup>3</sup>	Values <sup>3</sup>
Sample Results									1		
PFPrS	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001			
PFBS	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	· .	-	
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	_	_	_
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<u> </u>	_	_
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	
L-PFHxS	0.0044	0.0037	0.0036	0.0032	0.0032	0.0025	<0.001	<0.001	<del>                                       </del>	_	_
Total PFHxS <sup>4</sup>	0.0044	0.0037	0.0036	0.0032	0.0032	0.0025	<0.001	<0.001	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.0032	<0.0010	<0.001	<0.001	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.001		<0.0010	<0.001	<0.001	<del>                                     </del>		
Mono-PFOS	0.001	0.001	0.0016	0.0012	<0.0010	0.0010	<0.001	<0.001	-	-	
					0.0013						
L-PFOS	<0.001	0.002	0.0017	0.0018	0.0017	0.0031	<0.001	<0.001	-	-	-
Total PFOS <sup>4</sup>	0.0011	0.0033	0.0033	0.003	0.0030	0.0048	<0.001	<0.001	-	0.0091 6	0.48 6
Sum of PFHxS and PFOS <sup>5</sup>	0.0055	0.007	0.0069	0.0062	0.0062	0.0073	<0.001	<0.001	0.07	-	-
PFECHS	<0.001	<0.001	<0.001	-	<0.0010	<0.0020	<0.001	<0.001	-	-	-
PFBA	0.0039	0.0048	0.0037	0.0035	-	0.0031	<0.002	<0.001	-	-	-
PFPeA	0.0048	0.0052	0.0039	0.0038	0.0031	0.0031	<0.001	<0.001	-	-	-
PFHxA	0.0034	0.0036	0.0027	0.0023	0.0022	0.0019	<0.001	<0.001	-	-	-
PFHpA	0.0017	0.0019	0.0017	0.0016	0.0013	0.0013	<0.001	<0.001	-	-	-
PFOA	0.0016	0.0017	0.0015	0.0015	0.0014	0.0015	<0.001	<0.001	0.56	19	220
PFNA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
PFUnDA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
PFTrDA	-	<0.001	-	-	<0.0050	-	-	<0.001	-	-	-
PFTeDA	<0.001	<0.001	<0.001	-	<0.0010	-	-	<0.001	-	-	-
PFDoDA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
MeFOSA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
MeFOSAA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-		-
EtFOSAA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001			
4:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	_	_	_
6:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	† .	_	
8:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
10:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.0010		<0.001	<0.001	-	-	
FPrPA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	
EtFOSA	<0.001	<0.001	<0.001	<0.001	<0.0010	V0.0010	<0.001	<0.001	<del>                                     </del>		
EtFOSE	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	
									-		
FPePA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
FHpPA	<0.001	<0.001	<0.001	-	-		<0.001	<0.001	-	-	-
F-53B minor	<0.001	<0.001	<0.001	-	<0.0010	<0.0010	<0.001	<0.001	-	-	-
HFPO-DA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
Sum F-53B	<0.001	<0.001	<0.001	-	<0.0010	<0.0020	<0.001	<0.001	-	-	-
ADONA	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	-	-	-
P37DMOA	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	-	-	-
F-53B major	<0.001	<0.001	<0.001	-	<0.0010	<0.0020	<0.001	<0.001	-	-	-

1. Results in µg/L.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAS Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

## Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) $^{\mathrm{1}}$

				PFAS in Groundwater						Guidelines	
Sample Name	OHA ADJ GW106 3 290322	OHA ADJ GW106 4 290922	OHA GW106 050423	OHA GW106 091123	OHA GW106 090424	OHA ADJ GW107 1 011020	OHA ADJ GW107 2 291021	OHA ADJ GW107 3 300322		1	
Location	GW106	GW106	GW106	GW106	GW106	GW107	GW107	GW107	1		
Sample Date	29/03/2022	29/09/2022	5/04/2023	9/11/2023	9/04/2024	1/10/2020	29/10/2021	30/03/2022	NZ Drinking Water Standard, MoH	Technical Draft Default Guideline	ANZ WQG 95% Species Protection - Technical Draft Default Guideline
Lab Report Number	2780982	3011677	3288825	3521619	24-100766-1	2096735	2590579	2786744	2022 <sup>2</sup>	l .	l .
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	1	Values <sup>3</sup>	Values <sup>3</sup>
Sample Results	<u> </u>								1		
PFPrS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
PFBS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
PFPeS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
Total PFHxS <sup>4</sup>	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
L-PFOS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
Total PFOS <sup>4</sup>	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	0.0091 <sup>6</sup>	0.48 <sup>6</sup>
Sum of PFHxS and PFOS <sup>5</sup>	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	0.07	-	-
PFECHS	<0.001	<0.001	-	<0.0010	<0.0050	-	<0.001	<0.001	-	-	-
PFBA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	· .		
PFPeA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<u> </u>		
PFHxA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<u> </u>	-	
PFHpA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<del>                                     </del>		_
PFOA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	0.56	19	220
PFNA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-		-
PFDA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<u> </u>		_
PFUnDA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<u> </u>	-	
PFTrDA	<0.001	-	-	<0.0020	<0.0010		<0.001	<0.001	<del>                                     </del>		_
PFTeDA	-	_		<0.0010	<0.0010	-	-	<0.001	<del>                                       </del>		
PFDoDA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<b>+</b> -	<0.001	<0.001	<del>                                     </del>		_
FOSA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<del>                                       </del>		_
MeFOSA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<del>                                       </del>	-	_
MeFOSAA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<del>                                     </del>		-
EtFOSAA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<del>                                     </del>	-	
4:2 FTS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<del>                                     </del>		
6:2 FTS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	· ·	-	-
8:2 FTS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<del>                                     </del>		- :
10:2 FTS	<0.001	<0.001	<0.001	- <0.0010	<0.0010		<0.001	<0.001	<del>                                     </del>		
FPrPA	<0.001	<0.001	<0.001		<0.0010	-	<0.001	<0.001	-	-	
				<0.0010							
EtFOSA EtFOSE	<0.001 <0.001	<0.001 <0.001	<0.001 <0.001	<0.0010	<0.0010 <0.0010	<0.001	<0.001 <0.001	<0.001 <0.001	-	-	
				<0.0010			-		· ·		
FPePA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	· -	-	-
FHpPA	<0.001	<0.001		<0.0010	<0.0010	-	<0.001	<0.001	-	-	-
F-53B minor	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	-	•	•
HFPO-DA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	-	-	-
Sum F-53B	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	-	-	-
ADONA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	-	-	-
P37DMOA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	-	-	-
F-53B major	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	-	-	-

# Notes:

1. Results in µg/L.
2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAS Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHXS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) 1

				PFAS in Groundwater						Guidelines	
Sample Name	OHA ADJ GW107 4 300922	OHA GW107 050423	OHA GW107 091123	OHA_GW107_110424	OHA ADJ GW108 1 011020	OHA ADJ GW108 2 150321	OHA ADJ GW108 3 291021	OHA ADJ GW108 4 290322		1	
Location	GW107	GW107	GW107	GW107	GW108	GW108	GW108	GW108	1	ANZ WQG 99% Species Protection	ANZ WQG 95% Species Protection
Sample Date	30/09/2022	5/04/2023	9/11/2023	11/04/2024	1/10/2020	15/03/2021	29/10/2021	29/03/2022	NZ Drinking Water Standard, MoH	Technical Draft Default Guideline	1
Lab Report Number	3020439	3283490	3521604	24-103820-1	2096735	2313652	2590569	2780972	2022 <sup>2</sup>		
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	1	Values <sup>3</sup>	Values <sup>3</sup>
Sample Results	· ·								1		
PFPrS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFPeS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFHxS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFHxS <sup>4</sup>	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFOS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFOS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFOS <sup>4</sup>	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	0.0091 6	0.48 6
Sum of PFHxS and PFOS <sup>5</sup>	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	0.07	-	-
PFECHS	<0.001	<0.001	<0.0020	<0.0020	-	<0.001	<0.001	<0.001	-	-	-
PFBA	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.0011	<0.001	0.002	-	-	-
PFPeA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHxA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFOA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	0.56	19	220
PFNA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFDA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFUnDA	-	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
PFTrDA	-	-	-	-	-	-	<0.001	<0.001	-	-	-
PFTeDA	-	-	<0.0010	-	-	-	<0.001	-	-	-	-
PFDoDA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.001	<0.001	<0.0010	<0.0010	-	-	<0.001	-	-	-	-
MeFOSAA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-	-
6:2 FTS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
8:2 FTS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	<0.001	<0.001	<0.0010	-	-	-	<0.001	<0.001	-	-	-
FPrPA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
EtFOSA	<0.001	<0.001	<0.0010	-	-	-	<0.001	-	-	-	-
EtFOSE	<0.001	<0.001	<0.0010	<0.0010	<0.001	-	<0.001	<0.001	-	-	-
FPePA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	<u> </u>	-
FHpPA	<0.001	<0.001	<0.0010	-	-	<0.001	<0.001	<0.001	-	-	-
F-53B minor	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
HFPO-DA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
Sum F-53B	<0.001	<0.001	<0.0020	<0.0020	-	<0.001	<0.001	<0.001	_	_	-
ADONA	<0.001	<0.001	<0.0020	<0.0010	-	<0.001	<0.001	<0.001	-	<u>.</u>	-
P37DMOA	<0.001	<0.001	-	-	-	<0.001	<0.001	<0.001	-	-	-
F-53B major	<0.001	<0.001	<0.0020	<0.0020	<0.001	<0.001	<0.001	<0.001		<u> </u>	-

<sup>6.</sup> ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Results in μg/L.

<sup>2.</sup> Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS+PFHxS.

<sup>3.</sup> Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

<sup>4.</sup> Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

<sup>5.</sup> Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)  $^{\mathrm{1}}$ 

				PFAS in Groundwater						Guidelines	
Sample Name	OHA ADJ GW108 5 290922	OHA GW108 050423	OHA GW108 091123	OHA_GW108_090424	OHA ADJ GW109 1 011020	OHA ADJ GW109 2 150321	OHA ADJ GW109 3 291021	OHA ADJ GW109 4 290322			
Location	GW108	GW108	GW108	GW108	GW109	GW109	GW109	GW109			
Sample Date	29/09/2022	5/04/2023	9/11/2023	9/04/2024	1/10/2020	15/03/2021	29/10/2021	29/03/2022	NZ Drinking Water Standard, MoH	1	ANZ WQG 95% Species Protection
Lab Report Number	3011674	3288826	3521589	24-100810-1	2096735	2313643	2593930	2780975	2022 2	Technical Draft Default Guideline	I .
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base		Values <sup>3</sup>	Values <sup>3</sup>
Sample Results	<u> </u>								7		
PFPrS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFPeS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFHxS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFHxS <sup>4</sup>	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFOS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFOS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFOS <sup>4</sup>	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	0.0091 6	0.48 6
Sum of PFHxS and PFOS <sup>5</sup>	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	0.07	-	-
PFECHS	<0.001	-	<0.0020	<0.0050	-	<0.001	<0.001	<0.001	-	-	-
PFBA	<0.001	<0.001	0.0015	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFPeA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHxA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFOA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	0.56	19	220
PFNA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFDA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFUnDA	-	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
PFTrDA	-	-	-	<0.0010	-	-	-	<0.001	-	-	
PFTeDA	-	-	<0.0010	<0.0010	-	-	<0.001	-	-	-	-
PFDoDA	-	<0.001	<0.0010	<0.0010	-	-	<0.001	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.001	<0.001	<0.0010	<0.0010	-	-	<0.001	<0.001	-	-	-
MeFOSAA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	
6:2 FTS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
8:2 FTS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	-	<0.001	<0.0010	<0.0010	-	-	<0.001	<0.001	-	-	-
FPrPA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
EtFOSA	<0.001	<0.001	<0.0010	<0.0010	-	-	<0.001	<0.001	-	-	-
EtFOSE	<0.001	<0.001	<0.0010	<0.0010	<0.001	-	<0.001	<0.001	-	-	-
FPePA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
FHpPA	<0.001	-	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
F-53B minor	-	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
HFPO-DA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
Sum F-53B	<0.001	<0.001	<0.0020	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
ADONA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
P37DMOA	<0.001	<0.001	-	<0.0010	-	<0.001	<0.001	<0.001	-	-	-
F-53B major	<0.001	<0.001	<0.0020	<0.0010	-	<0.001	<0.001	<0.001	-	-	-

1. Results in µg/L.
2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAS Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)  $^{\mathrm{1}}$ 

					PFAS in	Groundwater					
Sample Name	OHA ADJ GW109 5 280922	OHA GW109 030423	OHA GW109 091123	OHA GW109 110424	OHA ADJ GW112.1 1 180321	OHA ADJ GW112.1 2 281021	OHA ADJ GW112.1 3 290322	OHA ADJ GW112.1 4 280922		1	
Location	GW109	GW109	GW109	GW109	GW112.1	GW112.1	GW112.1	GW112.1	1	I	<u>-</u>
Sample Date	28/09/2022	3/04/2023	9/11/2023	11/04/2024	18/03/2021	28/10/2021	29/03/2022	28/09/2022	NZ Drinking Water Standard, MoH	1	ANZ WQG 95% Species Protection -
Lab Report Number	3007288	3277682	3521598	24-103810-1	2335132	2593744	2785103	3020548	2022 <sup>2</sup>	Technical Draft Default Guideline Values <sup>3</sup>	Technical Draft Default Guideline Values <sup>3</sup>
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	1		
Sample Results									1		
PFPrS	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.012	<0.025	<0.025	-	-	-
PFBS	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.028	0.028	0.031	-	-	-
PFPeS	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.033	0.028	0.028	-	-	-
di-PFHxS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.025	<0.025	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.052	0.045	0.043	-	-	-
L-PFHxS	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.25	0.25	0.24	-	-	-
Total PFHxS <sup>4</sup>	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.3	0.3	0.28	-	-	-
PFHpS	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.0076	<0.025	<0.025	-	-	-
di-PFOS	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.011	<0.025	<0.025	-	-	-
Mono-PFOS	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.14	0.088	0.093	-	-	-
L-PFOS	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.21	0.094	0.1	-	-	-
Total PFOS <sup>4</sup>	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.36	0.18	0.19	-	0.0091 <sup>6</sup>	0.48 6
Sum of PFHxS and PFOS <sup>5</sup>	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.66	0.48	0.47	0.07	-	-
PFECHS	<0.001	-	<0.0020	<0.0020	<0.001	<0.001	<0.025	<0.025	-	-	-
PFBA	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.11	<0.2	0.12	-	-	-
PFPeA	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.42	0.42	0.44	-	-	-
PFHxA	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.33	0.34	0.34	-	-	-
PFHpA	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.17	0.16	0.16	-	-	-
PFOA	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.094	0.093	0.086	0.56	19	220
PFNA	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.037	0.026	0.03	-	-	-
PFDA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.025	<0.025	-	-	-
PFUnDA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.025	<0.025	-	-	-
PFTrDA	-	-	-	-	-	-	<0.1	<0.1	-	-	-
PFTeDA	<0.001	-	-	-	-	-	<0.1	<0.1	-	-	-
PFDoDA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.1	<0.1	-	-	-
FOSA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.025	<0.025	-	-	-
MeFOSA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.1	<0.1	-	-	-
MeFOSAA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.025	<0.025	-	-	-
EtFOSAA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.025	<0.025	-	-	-
4:2 FTS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.025	<0.025	-	-	-
6:2 FTS	<0.001	<0.001	<0.0010	<0.0010	<0.001	0.1	0.11	0.12	-	-	-
8:2 FTS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.1	<0.1	-	-	-
10:2 FTS	<0.001	<0.001	<0.0010	-	<0.001	<0.001	<0.025	<0.025	-	-	-
FPrPA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.1	<0.1	-	-	-
EtFOSA	<0.001	<0.001	<0.0010	-	-	<0.001	<0.1	<0.1	-	-	-
EtFOSE	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.1	<0.1	-	-	-
FPePA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.025	<0.025	-	-	-
FHpPA	<0.001	-	<0.0010	-	<0.001	<0.001	<0.025	<0.025	-	-	-
F-53B minor	<0.001	-	<0.0010	<0.0010	<0.001	<0.001	<0.05	<0.05	-	-	-
HFPO-DA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.05	<0.05	-	-	-
Sum F-53B	<0.001	-	<0.0020	<0.0020	<0.001	<0.001	<0.1	<0.1	-	-	-
ADONA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.025	<0.025	-	-	-
P37DMOA	<0.001	-	-	-	<0.001	<0.001	<0.05	<0.05	-	-	-
F-53B major	<0.001	-	<0.0020	<0.0020	<0.001	<0.001	<0.1	<0.1	-	-	-

1. Results in µg/L.
2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAS Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)  $^{\mathrm{1}}$ 

				PFAS in Groundwater						Guidelines	
Sample Name	OHA GW112.1 040423	OHA GW112.1 081123	OHA GW112.1 100424	OHA ADJ GW112.2 1 180321	OHA ADJ GW112.2 2 281021	OHA ADJ GW112.2 3 280322	OHA ADJ GW112.2 4 280922	OHA GW112.2 040423			
Location	GW112.1	GW112.1	GW112.1	GW112.2	GW112.2	GW112.2	GW112.2	GW112.2		ANZ WOG 00% Species Protection	- ANZ WQG 95% Species Protection
Sample Date	4/04/2023	8/11/2023	10/04/2024	18/03/2021	28/10/2021	28/03/2022	28/09/2022	4/04/2023	NZ Drinking Water Standard, MoH	Technical Draft Default Guideline	1 1
Lab Report Number	3277686	3519873	24-102552-1	2335132	2593744	2785781	3020548	3277686	2022 2	l .	
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	1	Values <sup>3</sup>	Values <sup>3</sup>
Sample Results	<del>'</del>								7		
PFPrS	<0.025	<0.025	<0.025	0.012	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBS	0.027	0.027	0.026	0.03	<0.001	<0.001	<0.001	<0.001	-	-	-
PFPeS	<0.025	0.028	0.028	0.035	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFHxS	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	0.041	0.043	0.043	0.056	<0.001	<0.001	<0.001	<0.001			-
L-PFHxS	0.27	0.23	0.26	0.29	<0.001	<0.001	<0.001	<0.001	1 .	· .	-
Total PFHxS <sup>4</sup>	0.31	0.27	0.30	0.35	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpS	<0.025	<0.025	<0.025	0.0075	<0.001	<0.001	<0.001	<0.001			_
di-PFOS	<0.025	<0.025	<0.025	0.012	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	0.095	0.10	0.092	0.16	<0.001	<0.001	<0.001	<0.001	-	-	<u> </u>
L-PFOS	0.033	0.14	0.052	0.21	<0.001	<0.001	<0.001	<0.001	-	<del>                                     </del>	<del>                                     </del>
Total PFOS <sup>4</sup>	0.24	0.24	0.24	0.38	<0.001	<0.001	<0.001	<0.001	1 -	0.0091 6	0.48 6
Sum of PFHxS and PFOS <sup>5</sup>	0.55	0.51	0.54	0.73	<0.001	<0.001	<0.001	<0.001	0.07	0.0091	0.48
PFECHS	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	<u> </u>	<u> </u>
PFBA	0.12	0.11	0.13	0.11	<0.001	<0.001	<0.001	<0.001	<del>                                     </del>	<del>                                     </del>	<u> </u>
PFPeA	0.42	0.42	0.42	0.4	<0.001	<0.001	<0.001	<0.001	-	<u> </u>	<u> </u>
PFHxA	0.42	0.35	0.34	0.4	<0.001	<0.001	<0.001	<0.001	<del>                                     </del>	1	<del>                                     </del>
PFHpA	0.39	0.55	0.16	0.34	<0.001	<0.001	<0.001	<0.001	+ :	<del>                                     </del>	<del>                                     </del>
PFOA	0.089	0.15	0.079	0.17	<0.001	<0.001	<0.001	<0.001	0.56	19	220
PFNA	0.089	0.085	0.079	0.092	<0.001	<0.001	<0.001	<0.001		- 19	- 220
PFDA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
											-
PFUnDA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<del>                                     </del>
PFTrDA	<0.1	<0.10	<0.10	-	-	<0.001	-	<u> </u>	-	-	
PFTeDA	<0.1	<0.10	<0.10	-		-			-	-	-
PFDoDA	<0.1	<0.10	<0.10	-	<0.001	<0.001	<0.001	<0.001	-	-	-
FOSA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.1	<0.10	<0.10	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSAA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
6:2 FTS	0.11	0.096	0.12	0.066	0.0052	<0.001	<0.001	<0.001	-	-	-
8:2 FTS	<0.1	<0.10	<0.10	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	<0.025	<0.025	<0.025	-	<0.001	<0.001	<0.001	<0.001	-	-	-
FPrPA	<0.1	<0.10	<0.10	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSA	<0.1	<0.10	<0.10	-	<0.001	-	<0.001	<0.001	-	· ·	-
EtFOSE	<0.1	<0.10	<0.10	-	<0.001	<0.001	<0.001	<0.001	-	-	-
FPePA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
FHpPA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-	-
F-53B minor	<0.05	<0.050	<0.050	<0.001	<0.001	<0.001	<0.001	-	-	-	-
HFPO-DA	<0.05	<0.050	<0.050	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Sum F-53B	<0.1	<0.10	<0.10	<0.001	<0.001	<0.001	<0.001	-	-	-	-
ADONA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
P37DMOA	<0.05	<0.050	<0.050	<0.001	<0.001	<0.001	<0.001	-	-	-	-
F-53B major	<0.1	<0.10	<0.10	<0.001	<0.001	<0.001	<0.001	-	-	-	-

# Notes: 1. Results in μg/L.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, Pt-Dia, and sum of Pt-DS + Pt-Hix).

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAS Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFDS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

6. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

-	Parameter not tested / no guideline value available.
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)  $^{\mathrm{1}}$ 

				PFAS in Groundwater						Guidelines	
Sample Name	OHA_GW112.2_081123	OHA_GW112.2_100424	OHA_ADJ_GW31_1_120218	OHA_ADJ_GW31_2_230518	OHA_ADJ_GW31_3_12918	OHA_ADJ_GW31_4_290920	OHA_ADJ_GW31_5_160321	OHA_ADJ_GW31_6_291021			
Location	GW112.2	GW112.2	GW31	GW31	GW31	GW31	GW31	GW31	1	ANZ WOG 99% Species Protection	- ANZ WQG 95% Species Protection -
Sample Date	8/11/2023	10/04/2024	12/02/2018	23/05/2018	12/09/2018	29/09/2020	16/03/2021	29/10/2021	NZ Drinking Water Standard, MoH	Technical Draft Default Guideline	1 '
Lab Report Number	3519873	24-102552-2	1032528	1153593	1252502	2096319	2316425	2593739	2022 <sup>2</sup>	l .	
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	1	Values <sup>3</sup>	Values <sup>3</sup>
Sample Results									1		
PFPrS	<0.0010	<0.0010	0.0033	0.0038	0.0058	0.0045	0.0042	0.0054	-	-	-
PFBS	<0.0010	<0.0010	0.011	0.01	0.0095	0.01	0.011	0.009	-	-	-
PFPeS	<0.0010	<0.0010	0.014	0.0089	0.0084	0.0085	0.0096	0.0083	-	-	-
di-PFHxS	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	<0.0010	<0.0010	0.016	0.013	0.014	0.016	0.017	0.013	-	-	-
L-PFHxS	<0.0010	<0.0010	0.064	0.055	0.056	0.063	0.073	0.059	-	-	-
Total PFHxS <sup>4</sup>	<0.0010	<0.0010	0.08	0.068	0.07	0.079	0.09	0.072	-	-	-
PFHpS	<0.0010	<0.0010	0.0014	0.0011	0.0011	0.0015	0.0016	0.0013	-	-	-
di-PFOS	<0.0010	<0.0010	0.0042	0.002	<0.001	0.0034	0.0034	0.0026	-	-	-
Mono-PFOS	<0.0010	<0.0010	0.033	0.016	0.016	0.028	0.037	0.025	-	-	-
L-PFOS	<0.0010	<0.0010	0.023	0.0079	0.0058	0.013	0.028	0.011	-	-	-
Total PFOS <sup>4</sup>	<0.0010	<0.0010	0.06	0.026	0.022	0.044	0.068	0.039	-	0.0091 6	0.48 6
Sum of PFHxS and PFOS <sup>5</sup>	<0.0010	<0.0010	0.14	0.094	0.092	0.12	0.16	0.11	0.07	-	-
PFECHS	<0.0010	<0.0020	-	-	-	-	<0.001	<0.001		-	
PFBA	-	<0.0010	0.055	0.035	0.035	0.047	0.06	0.042	· .	-	-
PFPeA	<0.0010	<0.0010	0.21	0.097	0.083	0.15	0.25	0.13	<u> </u>	-	-
PFHxA	<0.0010	<0.0010	0.14	0.074	0.067	0.12	0.17	0.083	<u> </u>	-	_
PFHpA	<0.0010	<0.0010	0.053	0.027	0.024	0.042	0.063	0.031	<del>                                       </del>	· .	<u> </u>
PFOA	<0.0010	<0.0010	0.024	0.013	0.011	0.019	0.025	0.016	0.56	19	220
PFNA	<0.0010	<0.0010	0.0059	0.0021	0.0014	0.0039	0.0076	0.0029	-	-	-
PFDA	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<del>                                       </del>	-	<u> </u>
PFUnDA	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<del>                                       </del>	-	<u> </u>
PFTrDA	<0.0050	<0.0010	-	<0.025	<0.005	-	-	-	<del>                                       </del>	-	<u> </u>
PFTeDA	<0.0010	-	<del>-</del>	<0.1	<0.005	_	_	<0.001	<del>                                       </del>	<del>                                     </del>	<u> </u>
PFDoDA	<0.0010	<0.0010	<0.001	<0.025	<0.001	<0.001	<0.001	<0.001	<del>                                       </del>	-	<u> </u>
FOSA	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<del>-</del>	-	-
MeFOSA	<0.0010	-	<0.025	<0.005	<0.001	<0.001	<0.001	<0.001	<del>                                       </del>	-	<u> </u>
MeFOSAA	<0.0010	<0.0010	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<del>                                       </del>	-	<u> </u>
EtFOSAA	-	<0.0010	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<del>                                     </del>	-	<del>                                     </del>
4:2 FTS	<0.0010	<0.0010	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<del>                                     </del>	-	<del>                                     </del>
6:2 FTS	<0.0010	<0.0010	0.036	0.0092	0.0052	0.001	0.0052	0.0036	<del>                                     </del>	-	<del>                                     </del>
8:2 FTS	<0.0010	<0.0010	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<del>                                     </del>	-	<u> </u>
10:2 FTS	<0.0010	<0.0010	-			-	<0.001	<0.001	<del>                                     </del>	-	<del>                                     </del>
FPrPA	<0.0010	<0.0010	<del>                                     </del>	-	-		<0.001	<0.001	<del>                                     </del>	-	<del>                                     </del>
EtFOSA	<0.0010		<0.025	<0.001	<0.001	<0.001	<0.001	-	+ :	-	<del>                                     </del>
EtFOSE	-	<0.0010	<0.025	<0.001	<0.001	<0.001	<0.001	-	<del>                                     </del>	-	<del>                                     </del>
FPePA	<0.0010	<0.0010		<0.005	<0.001	<0.001	<0.001	<0.001	+ :	-	<del>                                     </del>
FHpPA	-	<0.0010	-	-	-	-	<0.001	<0.001	<del>                                     </del>	-	<del>                                     </del>
F-53B minor	<0.0010	<0.0010	<u> </u>	-	-	-	<0.001	<0.001	<del>                                     </del>	-	<del>                                     </del>
HFPO-DA Sum F-53B	<0.0010	<0.0010	· ·	-	-	-	<0.001 <0.001	<0.001 <0.001	<del>-</del>	<u> </u>	<u> </u>
** **	<0.0010	<0.0020				-			<del>-</del>		
ADONA P37DMOA	<0.0010	<0.0010	-	-	-	-	<0.001	<0.001	<del>-</del>	-	-
	<0.0010	<0.0010	-	-	-	-	<0.001	<0.001	<del>-</del>	-	-
F-53B major	<0.0010	<0.0020	-	-	-	-	<0.001	<0.001	-	-	-

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

2. Minstry of Health (MoH, 20/21) Water Services (Drinking Water Standards for New Zealand) Regulations 20/22, PHOA, and sum of PHOS. PHHS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAS Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monorethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

6. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

-	Parameter not tested / no guideline value available.
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)  $^{\mathrm{1}}$ 

				PFAS in Groundwater					I	Guidelines	
Sample Name	OHA ADJ GW31 7 290322	OHA ADJ GW31 8 290922	OHA_GW31_040423	OHA GW31 091123	OHA GW31 100424	OHA ADJ GW53 1 150218	OHA ADJ GW53 2 150518	OHA ADJ GW53 3 10918			
Location	GW31	GW31	GW31	GW31	GW31	GW53	GW53	GW53		ANZ WOG 00% Species Protection	ANZ WQG 95% Species Protection
Sample Date	29/03/2022	29/09/2022	4/04/2023	9/11/2023	10/04/2024	15/02/2018	15/05/2018	10/09/2018	NZ Drinking Water Standard, MoH	Technical Draft Default Guideline	1 ' '
Lab Report Number	2786750	3007286	3277680	3521587	24-103818-1	1040534	1139707	1244388	2022 <sup>2</sup>	l .	
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base		Values <sup>3</sup>	Values <sup>3</sup>
Sample Results	·					•			7		
PFPrS	0.0046	<0.001	0.0042	0.0031	0.0037	<0.001	<0.001	<0.001	-	-	-
PFBS	0.0095	<0.001	0.0081	0.0088	0.0099	<0.001	<0.001	< 0.001	-	-	-
PFPeS	0.0085	<0.001	0.0075	0.0065	0.0077	<0.001	<0.001	<0.001	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	0.013	<0.001	0.011	0.014	0.015	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	0.058	<0.001	0.048	0.050	0.062	<0.001	<0.001	<0.001	-	-	-
Total PFHxS <sup>4</sup>	0.071	<0.001	0.059	0.064	0.077	<0.001	<0.001	<0.001	-	-	-
PFHpS	0.0013	<0.001	0.0011	<0.0010	0.0013	<0.001	<0.001	< 0.001	-	-	-
di-PFOS	0.0025	<0.001	0.002	0.0020	0.0031	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	0.024	<0.001	0.018	0.022	0.028	<0.001	<0.001	<0.001	-	-	-
L-PFOS	0.015	<0.001	0.0085	0.0078	0.014	<0.001	<0.001	<0.001	-	-	-
Total PFOS <sup>4</sup>	0.042	<0.001	0.028	0.032	0.045	<0.001	<0.001	<0.001	-	0.0091 <sup>6</sup>	0.48 6
Sum of PFHxS and PFOS <sup>5</sup>	0.11	<0.001	0.087	0.096	0.12	<0.001	<0.001	<0.001	0.07	-	-
PFECHS	<0.001	<0.001	-	<0.0020	<0.0020	-	-	-	-	-	-
PFBA	0.047	<0.001	0.04	0.040	0.052	<0.005	<0.005	<0.005	-	-	-
PFPeA	0.15	<0.001	0.11	0.11	0.17	<0.001	<0.001	<0.001	-	-	-
PFHxA	0.1	<0.001	0.072	0.077	0.11	<0.001	<0.001	<0.001	-	-	-
PFHpA	0.036	<0.001	0.027	0.029	0.038	<0.001	<0.001	<0.001	-	-	-
PFOA	0.017	<0.001	0.012	0.013	0.019	<0.001	<0.001	<0.001	0.56	19	220
PFNA	0.0041	<0.001	0.0026	0.0026	0.0052	<0.001	<0.001	<0.001	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
PFUnDA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
PFTrDA	<0.001	-	-	-	-	<0.025	<0.025	-	-	-	-
PFTeDA	-	<0.001	-	<0.0010	-	-	-	-	-	-	-
PFDoDA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.025	<0.025	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.025	<0.005	<0.001	-	-	-
MeFOSAA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
6:2 FTS	0.0038	<0.001	0.0033	0.0032	0.0042	<0.001	<0.01	<0.001	-	-	-
8:2 FTS	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	<0.001	<0.001	<0.001	<0.0010	-	-	-	-	-	-	-
FPrPA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-	-
EtFOSA	<0.001	<0.001	<0.001	<0.0010	-	<0.025	<0.001	<0.001	-	-	-
EtFOSE	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.025	<0.005	<0.005	-	-	-
FPePA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-	-
FHpPA	<0.001	<0.001	-	<0.0010	-	-	-	-	-	-	-
F-53B minor	<0.001	<0.001	-	<0.0010	<0.0010	-	-	-	-	-	-
HFPO-DA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-	-
Sum F-53B	<0.001	<0.001	-	<0.0020	<0.0020	-	-	-	-	-	-
ADONA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-		-
P37DMOA	<0.001	<0.001	-	-	-	-	-	-	-	-	-
F-53B major	<0.001	<0.001		<0.0020	<0.0020	_	-	-	_		_

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, Pt-Dia, and sum of Pt-DS + Pt-Hix).

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAS Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFDS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

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-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)  $^{\mathrm{1}}$ 

	PFAS in Groundwater								Guidelines			
Sample Name	OHA ADJ GW53 4 300920	OHA ADJ GW53 5 160321	OHA ADJ GW53 6 291021	OHA ADJ GW53 7 290322	OHA ADJ GW53 8 290922	OHA GW53 040423	OHA GW53 081123	OHA GW53 100424	T T			
Location	GW53	GW53	GW53	GW53	GW53	GW53	GW53	GW53		ANZ WOG 00% Species Protection	ANZ WQG 95% Species Protection	
Sample Date	30/09/2020	16/03/2021	29/10/2021	29/03/2022	29/09/2022	4/04/2023	8/11/2023	10/04/2024	NZ Drinking Water Standard, MoH	Technical Draft Default Guideline	1	
Lab Report Number	2096317	2316429	2593735	2780973	3011675	3277675	3519871	24-103815-1	2022 2	l .	l .	
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	7	Values <sup>3</sup>	Values <sup>3</sup>	
Sample Results	· ·				•				7			
PFPrS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
PFBS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	<0.001	<0.0010	-	-	-	
L-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
Total PFHxS <sup>4</sup>	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
Mono-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
L-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
Total PFOS <sup>4</sup>	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	0.0091 6	0.48 6	
Sum of PFHxS and PFOS <sup>5</sup>	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	0.07	-	-	
PFECHS	-	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.0020	-	-	-	
PFBA	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	-	<0.0010	-	-	-	
PFPeA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
PFHxA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
PFHpA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
PFOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	0.56	19	220	
PFNA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
PFUnDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.0010	-	-	-	
PFTrDA	-	-	-	-	-	-	-	-	-	-	-	
PFTeDA	-	-	<0.001	-	<0.001	-	-	-	-	-	-	
PFDoDA	<0.001	<0.001	<0.001	-	<0.001	<0.001	-	<0.0010	-	-	-	
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
MeFOSA	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	<0.001	<0.0010	-	-	-	
MeFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
EtFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
4:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
6:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
8:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	<0.001	<0.0010	-	-	-	
10:2 FTS	-	<0.001	<0.001	-	<0.001	<0.001	-	-	-	-	-	
FPrPA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
EtFOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-	
EtFOSE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
FPePA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
FHpPA	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-	
F-53B minor	-	<0.001	<0.001	-	<0.001	-	-	<0.0010	-	-	-	
HFPO-DA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
Sum F-53B	-	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.0020	-	-	-	
ADONA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	
P37DMOA	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-	
F-53B major	-	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.0020	-	-	-	

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, Pt-Dia, and sum of Pt-DS + Pt-Hix).

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAS Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFDS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

6. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

-	Parameter not tested / no guideline value available.
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)  $^{\mathrm{1}}$ 

				PFAS in Groundwater					I	Guidelines	
Sample Name	OHA ADJ GW6 1 111217	OHA ADJ GW6 2 130218	OHA ADJ GW6 3 140518	OHA ADJ GW6 4 13918	OHA ADJ GW6 5 290920	OHA ADJ GW6 6 160321	OHA ADJ GW6 7 281021	OHA ADJ GW6 8 290322			
Location	GW6	GW6	GW6	GW6	GW6	GW6	GW6	GW6	7	ANZ WOG 99% Species Protection	- ANZ WQG 95% Species Protection
Sample Date	11/12/2017	13/02/2018	14/05/2018	13/09/2018	29/09/2020	16/03/2021	28/10/2021	29/03/2022	NZ Drinking Water Standard, MoH	Technical Draft Default Guideline	1 1
Lab Report Number	989127	1032179	1133549	1260155	2096315	2313648	2590577	2780968	2022 <sup>2</sup>	l .	
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	On-base	7	Values <sup>3</sup>	Values <sup>3</sup>
Sample Results									7		
PFPrS	0.0022	0.0034	-	0.004	0.0025	0.0016	0.0025	-	-	-	-
PFBS	0.0067	0.0065	0.0022	0.0038	0.0027	0.0023	0.0028	0.0021	-	-	-
PFPeS	0.0054	0.0056	0.0013	0.0038	0.0039	0.0031	0.0033	0.0042	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	0.011	0.0097	0.002	0.0026	0.0023	0.0035	0.0026	0.004	-	-	-
L-PFHxS	0.066	0.054	0.014	0.014	0.014	0.014	0.013	0.027	-	-	-
Total PFHxS <sup>4</sup>	0.077	0.064	0.016	0.017	0.016	0.018	0.016	0.031	-	-	-
PFHpS	0.0018	0.0023	<0.001	<0.001	<0.001	<0.001	<0.001	0.0014	-	-	-
di-PFOS	0.0027	0.0022	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	0.026	0.025	0.0089	0.003	0.0044	0.0038	0.0051	0.014		-	-
L-PFOS	0.023	0.023	0.0092	0.0014	0.0042	0.0043	0.009	0.017	-	-	-
Total PFOS⁴	0.052	0.05	0.018	0.0044	0.0086	0.0081	0.014	0.031	-	0.0091 6	0.48 6
Sum of PFHxS and PFOS <sup>5</sup>	0.13	0.11	0.034	0.021	0.025	0.026	0.03	0.062	0.07	-	-
PFECHS	-	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
PFBA	0.025	0.02	-	<0.01	-	0.011	0.0053	-	-	-	-
PFPeA	0.057	0.044	0.0035	0.0037	0.003	<0.001	0.0068	0.018	-	-	-
PFHxA	0.044	0.038	0.0039	0.0053	0.0038	0.0072	0.0078	0.017	-	-	-
PFHpA	0.02	0.016	0.0018	0.0021	0.0024	0.003	0.0033	0.0091	-	-	-
PFOA	0.014	0.014	0.0022	0.0018	0.0019	0.0031	0.0019	0.0088	0.56	19	220
PFNA	0.0038	0.0034	<0.001	<0.001	<0.001	<0.001	<0.001	0.0033	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFUnDA	<0.005	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001		· .	-
PFTrDA	-	-	<0.025	<0.005	-	-	<0.001	<0.001	-	-	-
PFTeDA	-	-	<0.025	<0.005	-	-	-	-		· .	-
PFDoDA	-	<0.001	<0.025	<0.001	-	-	<0.001	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			-
MeFOSA	-	-	<0.005	<0.001	<0.001	-	<0.001	<0.001	-	-	-
MeFOSAA	<0.005	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<u>.</u>	-
EtFOSAA	<0.005	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<u>.</u>	-
4:2 FTS	<0.005	<0.001	<0.001	-	-	-	-	-	-	<u>.</u>	-
6:2 FTS	0.023	0.0032	<0.01	0.001	-	-	0.0013	<0.001	-	-	-
8:2 FTS	<0.005	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001			-
10:2 FTS	-	-	-	-	-	-	<0.001	<0.001		<u>.</u>	-
FPrPA	-	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
EtFOSA	-	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<u>.</u>	<u> </u>	<u>-</u>
EtFOSE	-	<0.025	<0.005	<0.001	<0.001	-	<0.001	<0.001	-	-	-
FPePA	-	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
FHpPA	-	-	-	_	-	<0.001	<0.001	<0.001	-	-	<u>-</u>
F-53B minor	-	_	-	-	-	<0.001	<0.001	<0.001	-	<u>.</u>	<u> </u>
HFPO-DA	-	_	-	_	_	<0.001	<0.001	<0.001		<u> </u>	<u> </u>
Sum F-53B	-	_	-	-	-	<0.001	<0.001	<0.001	<u>.</u>	-	<u> </u>
ADONA	_	_	-	-		<0.001	<0.001	<0.001	<u> </u>	-	<u> </u>
P37DMOA	-	-		_		<0.001	<0.001	<0.001	-	-	<del>                                     </del>
F-53B major	_	_	_	_	_	<0.001	<0.001	<0.001		<del>                                     </del>	<b>.</b>

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, Pt-Dia, and sum of Pt-DS + Pt-Hix).

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAS Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFDS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

6. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

-	Parameter not tested / no guideline value available.
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)  $^{\rm 1}$ 

				PFAS in Groundwater						Guidelines	
Sample Name	OHA_ADJ_GW6_9_280922	OHA GW6 040423	OHA GW6 091123	OHA GW6 100424	OHA_ADJ_GW65_1_210218	OHA_ADJ_GW65_2_170518	OHA_ADJ_GW65_3_11918	OHA_ADJ_GW65_4_290920	i i		
Location	GW6	GW6	GW6	GW6	GW65	GW65	GW65	GW65	1	ANT MOC 00% Species Protection	ANZ WQG 95% Species Protection -
Sample Date	28/09/2022	4/04/2023	9/11/2023	10/04/2024	21/02/2018	17/05/2018	11/09/2018	29/09/2020	NZ Drinking Water Standard, MoH	Technical Draft Default Guideline	1 1
Lab Report Number	3007292	3277674	3521816	24-103826-1	1047797	1142284	1244707	2096328	2022 ²	l .	l .
Monitoring Zone	On-base	On-base	On-base	On-base	Off-base	Off-base	Off-base	Off-base	1	Values <sup>3</sup>	Values <sup>3</sup>
Sample Results					•				1		
PFPrS	0.0019	0.0028	0.0018	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBS	0.0026	0.0038	0.0026	0.002	<0.001	<0.001	<0.001	<0.001	-	-	-
PFPeS	0.003	0.0081	0.0034	0.0017	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFHxS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	0.0035	0.0072	0.0032	0.0029	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	0.02	0.047	0.017	0.017	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFHxS <sup>4</sup>	0.024	0.054	0.020	0.020	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpS	<0.001	0.0022	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFOS	<0.001	0.0027	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	0.011	0.035	0.0075	0.0077	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFOS	0.0041	0.041	0.0069	0.0066	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFOS <sup>4</sup>	0.015	0.079	0.014	0.014	<0.001	<0.001	<0.001	<0.001	-	0.0091 <sup>6</sup>	0.48 6
Sum of PFHxS and PFOS <sup>5</sup>	0.039	0.13	0.034	0.034	<0.001	<0.001	<0.001	<0.001	0.07		-
PFECHS	<0.001	-	<0.0020	<0.0020	-	-	-		-	-	-
PFBA	0.0061	0.019	0.0063	0.011	<0.005	<0.01	<0.005	<0.001	<u> </u>	-	_
PFPeA	0.009	0.039	0.0050	0.0078	<0.001	<0.001	<0.001	<0.001	· .	_	-
PFHxA	0.01	0.032	0.0055	0.030	<0.001	<0.001	<0.001	<0.001	<del>                                     </del>		
PFHpA	0.0047	0.016	0.0033	0.0041	<0.001	<0.001	<0.001	<0.001	<del>                                     </del>	-	-
PFOA	0.003	0.014	0.0027	0.0036	<0.001	<0.001	<0.001	<0.001	0.56	19	220
PFNA	<0.003	0.0058	<0.0010	0.0013	<0.001	<0.001	<0.001	<0.001	-		-
PFDA	<0.001	<0.001	<0.0010	<0.0013	<0.001	<0.001	<0.001	<0.001	<del>                                     </del>		
PFUnDA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	<0.001	<del>                                     </del>	-	-
PFTrDA	-	-	-	-		<0.025	<0.001	-	<del>                                     </del>		-
PFTeDA	-	<del>-</del>	-	<u> </u>	<del>                                     </del>	-	<0.005	-	<del>                                     </del>	-	-
PFDoDA	<0.001	<0.001	<0.0010	<0.0010	<del>                                     </del>	<0.025	<0.003	<0.001	<del></del>		
FOSA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.025	<0.001	<0.001	<del>                                     </del>	-	-
MeFOSA MeFOSAA	<0.001	<0.001	<0.0010 <0.0010	<0.0010 <0.0010	<0.005	<0.005 <0.001	<0.005 <0.001	<0.001 <0.001	<u> </u>	-	-
EtFOSAA	<0.001	<0.001	<0.0010	<0.0010	<0.005	<0.001	<0.001	<0.001	<del>                                     </del>	-	-
4:2 FTS	<0.001	<0.001 <0.001	<0.0010	<0.0010	<0.005	<0.001	<0.001	<0.001	<del>                                     </del>	-	-
4.2 FTS 6:2 FTS			<0.0010	<0.0010	<0.005	<0.001	<0.001	<0.001	1	-	-
	<0.001	0.0013		<0.0010	<0.005		<0.001	<0.001			
8:2 FTS	<0.001	<0.001	<0.0010			<0.001			-	-	-
10:2 FTS FPrPA	<0.001	<0.001	<0.0010 <0.0010	<0.0010	-	-	-	-	-	-	-
	<0.001	<0.001									
EtFOSA	<0.001	<0.001	<0.0010		-	<0.001	<0.005	<0.001	-	-	-
EtFOSE	<0.001	<0.001	<0.0010	<0.0010	-	<0.005	<0.001	<0.001	-	-	-
FPePA	<0.001	<0.001	<0.0010	0.038	-	-	-	-	-	-	-
FHpPA	<0.001	-	<0.0010	-	-	-	-	-	-	-	-
F-53B minor	<0.001		<0.0010	<0.0010	-	-	-	-	-	-	-
HFPO-DA	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-	-	-
Sum F-53B	<0.001	-	<0.0020	<0.0020	-	-	-	-	-	-	-
ADONA	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-	-	-
P37DMOA	<0.001	-	-	-	-	-	-	-	-	-	-
F-53B major	<0.001	-	<0.0020	<0.0020	-	-	-	-	-	-	-

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.
4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.
5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

6. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)  $^{\rm 1}$ 

	PFAS in Groundwater									Guidelines			
Sample Name	OHA ADJ GW65 5 150321	OHA ADJ GW65 6 291021	OHA ADJ GW65 7 290322	OHA ADJ GW65 8 290922	OHA GW65 050423	OHA GW65 091123	OHA GW65 110424	OHA ADJ GW67 1 210218					
Location	GW65	GW65	GW65	GW65	GW65	GW65	GW65	GW67	1	ANZ WQG 99% Species Protection	- ANZ WQG 95% Species Protection		
Sample Date	15/03/2021	29/10/2021	29/03/2022	29/09/2022	5/04/2023	9/11/2023	11/04/2024	21/02/2018	NZ Drinking Water Standard, MoH	Technical Draft Default Guideline	Technical Draft Default Guidelin		
ab Report Number	2313647	2593738	2780969	3011675	3283483	3521600	24-103802-1	1047809	2022 <sup>2</sup>				
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	1	Values <sup>3</sup>	Values <sup>3</sup>		
Sample Results								-	1				
PFPrS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-		
PFBS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-		
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-		
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-		
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-		
L-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	0.0016	-	-	-		
Total PFHxS <sup>4</sup>	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	0.0016	-	-	-		
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-		
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-		
Mono-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-		
L-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-		
Total PFOS⁴	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	0.0091 6	0.48 6		
Sum of PFHxS and PFOS <sup>5</sup>	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	0.0016	0.07	-	-		
PFECHS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0020	-	-	-	-		
PFBA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	-		
PFPeA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-		
PFHxA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-		
PFHpA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-	-		
PFOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	0.56	19	220		
PFNA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	-	-			
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	· .				
PFUnDA	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.0010	<0.001	-	-	-		
PFTrDA	-	-	<0.001	-	-	<0.002	-	-	· .				
PFTeDA	-	<0.001	-	-	<0.001	<0.001	-	· .	<u> </u>	-	· .		
PFDoDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	-		
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.001	<u> </u>	-	· .		
MeFOSA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	-		
MeFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.005	-	_	<u> </u>		
EtFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.005	-	-	-		
4:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.005	-	-	-		
6:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.005	_	_	_		
8:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.005	-	-	-		
10:2 FTS	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-	_	_		
FPrPA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	<u>.</u>	-	<u> </u>		
EtFOSA	-	<0.001	<0.001	<0.001	-	<0.001	-	<u> </u>	<del>                                     </del>	-	<u> </u>		
EtFOSE	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	<u>.</u>	-	<u> </u>		
FPePA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<u> </u>	<del>                                     </del>	-	<u> </u>		
FHpPA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<u>.</u>	-	<u> </u>		
F-53B minor	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<u> </u>	<del>                                     </del>	-	<u> </u>		
HFPO-DA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	+	<del>                                     </del>	-	<del>                                     </del>		
Sum F-53B	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	<del>-</del>	-	-	<del>                                     </del>		
ADONA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-	-	<del>                                     </del>		
P37DMOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<del>                                     </del>	-	-	<del>                                     </del>		
F-53B major	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0020	-	<del>                                     </del>	-	<del>                                     </del>		

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

2. Nustralian and New Zealand Guidelines for Fresh and Marrine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAS Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

6. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS)  $^{\rm 1}$ 

				PFAS in Groundwater						Guidelines	
Sample Name	OHA ADJ GW67 2 140518	OHA ADJ GW67 3 110918	OHA ADJ GW67 4 300920	OHA ADJ GW67 5 170321	OHA ADJ GW67 6 271021	OHA ADJ GW67 7 290322	OHA ADJ GW67 8 280922	OHA GW67 091123			
ocation	GW67	GW67									
ample Date	14/05/2018	11/09/2018	30/09/2020	17/03/2021	27/10/2021	29/03/2022	28/09/2022	9/11/2023	NZ Drinking Water Standard, MoH	ANZ WQG 99% Species Protection	ANZ WQG 95% Species Protection
ab Report Number	1134445	1244090	2096741	2317694	2618128	2780991	2999090	3521593	2022 2	Technical Draft Default Guideline	Technical Draft Default Guidelin
Monitoring Zone	Off-base	Off-base		Values <sup>3</sup>	Values <sup>3</sup>						
ample Results											
PFPrS	<0.001	-	<0.001	0.0013	<0.001	<0.001	<0.025	<0.0010	-	-	-
PFBS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-		-
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-		-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
-PFHxS	0.0018	0.0012	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010			-
Fotal PFHxS <sup>4</sup>	0.0018	0.0012	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010		_	_
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-		-
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
Mono-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
L-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
Total PFOS <sup>4</sup>	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	<del>-</del>	0.0091 <sup>6</sup>	0.48 6
Sum of PFHxS and PFOS <sup>5</sup>	0.0018	0.0012	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	0.07	0.0091	0.46
PFECHS	-	-	-	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
PFBA		-	<0.001	0.0072	-	0.0087	<0.1	0.011	-	-	-
PFPeA	<0.001	_	<0.001	<0.001	<0.001	<0.001	<0.1	<0.0010	-	-	-
PFHxA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	
PFHpA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	<del>                                     </del>	-	
PFOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	0.56	19	220
PFNA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010			-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	<del>-</del>	-	-
PFUnDA	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	
PFTrDA	<0.001	<0.001	-		<0.001	<0.001	<0.1	- <0.0010	<del>                                     </del>	-	-
PFTeDA	<0.025	<0.005	-	-	<0.001	<0.001	<0.1	<0.0010	-	-	-
PFDoDA	<0.025	<0.003	-	<0.001	<0.001	<0.001	<0.1	<0.0010	-	-	-
FOSA	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.1	<0.0010	-	-	-
MeFOSA	<0.001	<0.005	-	V0.001			<0.1		-	-	-
MeFOSAA	<0.005	<0.005	<0.001	<0.001	<0.001 <0.001	<0.001 <0.001	<0.1	<0.0010 <0.0010	-	-	-
EtFOSAA	<0.001	<0.001	<0.001	<0.001			<0.025				
4:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.0010	-		-
					<0.001	-		<0.0010			
6:2 FTS 8:2 FTS	<0.01 <0.001	<0.001 <0.001	<0.001 <0.001	<0.001 <0.001	-	<0.001	<0.05 <0.1	<0.0010	-	-	-
· · · · · · · · · · · · · · · · · · ·					<0.001	<0.001	-	<0.0010	-	-	-
10:2 FTS	-	-	-	<0.001 <0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
FPrPA			-		<0.001	<0.001	<0.1	<0.0010	-	-	-
EtFOSA	<0.001	<0.005	-	-	<0.001	<0.001	<0.1	<0.0010	-	-	-
EtFOSE	<0.005	<0.001	<0.001	-	<0.001	<0.001	<0.1	<0.0010	-	-	-
FPePA	-	-	-	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
FHpPA	-	-	-	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
F-53B minor	-	-	-	<0.001	<0.001	<0.001	<0.05	<0.0010	-	-	-
HFPO-DA	-	-	-	<0.001	<0.001	<0.001	<0.05	<0.0010	-	-	-
Sum F-53B	-	-	-	<0.001	<0.001	<0.001	<0.1	<0.0020	-	-	-
ADONA	-	-	-	<0.001	<0.001	<0.001	<0.025	<0.0010	-	-	-
P37DMOA	-	-	-	<0.001	<0.001	<0.001	<0.05	-	-	-	-
F-53B major	-	-	-	<0.001	<0.001	<0.001	<0.1	<0.0020	-	-	-

2. Ministry of Health (MoH, 2022) Water Services (Drinking Water Standards for New Zealand) Regulations 2022, PFOA, and sum of PFOS + PFHxS.

2. Nustralian and New Zealand Guidelines for Fresh and Marrine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan 2.0 – Table 5. The Heads of EPAS Australia and New Zealand (HEPA), January 2020.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

6. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 99% ecological guidelines.
1.2	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds drinking water standard.

Table E-2: Surface Water Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) <sup>1</sup>

			PFAS Samples in Surface Water					Guid	elines
Field_ID	OHA ADJ SW33 1 190218	OHA ADJ SW33 2 220518	OHA ADJ SW33 3 12918	OHA ADJ SW33 4 290920	OHA ADJ SW33 5 160321	OHA ADJ SW33 6 291021	OHA ADJ SW33 7 280322		
Location_Code	SW33	SW33	SW33	SW33	SW33	SW33	SW33	ANZ WQG for 95% Species	ANZ WQG for 99% Species
Sampled Date Time	19/02/2018	22/05/2018	12/09/2018	29/09/2020	16/03/2021	29/10/2021	28/03/2022	Protection - Technical Draft	Protection - Technical Draft
Lab_Report_Number	1047510	1147417	1248198	2094714	2316431	2590572	2785715	Default Guideline Values <sup>2</sup>	Default Guideline Values <sup>2</sup>
Sample Results									
PFPrS	0.0036	<0.001	0.0034	<0.025	0.002	0.0035	0.0018	-	-
PFBS	0.012	<0.001	0.0077	<0.025	0.0062	0.0072	0.0037	-	-
PFPeS	0.012	<0.001	0.0075	<0.025	0.0058	0.0077	0.004	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-
Mono-PFHxS	0.019	<0.001	0.012	<0.025	0.0088	0.012	0.0058	-	-
L-PFHxS	0.11	0.0015	0.067	<0.025	0.049	0.074	0.033	-	-
Total PFHxS <sup>4</sup>	0.13	0.0015	0.079	<0.025	0.058	0.086	0.039	-	-
PFHpS	0.0033	<0.001	0.0017	<0.025	0.0013	0.002	<0.001	-	-
di-PFOS	0.0046	<0.001	0.0025	<0.025	0.0021	0.0028	0.0013	-	-
Mono-PFOS	0.06	<0.001	0.032	<0.025	0.036	0.041	0.019	-	-
L-PFOS	0.047	0.0013	0.024	<0.025	0.052	0.045	0.02	-	-
Total PFOS⁴	<u>0.11</u>	0.0013	0.058	<0.025	0.09	0.089	0.04	0.48 <sup>3</sup>	0.0091 <sup>3</sup>
Sum of PFHxS and PFOS 5	0.24	0.0028	0.14	<0.025	0.15	0.18	0.079	-	-
PFECHS	-	-	-	-	<0.001	<0.001	<0.001	-	-
PFBA	0.087	-	0.044	<0.2	0.043	0.061	0.025	-	-
PFPeA	0.4	0.0037	0.16	<0.1	0.17	0.27	0.085	-	-
PFHxA	0.29	0.0033	0.13	<0.025	0.13	0.18	0.061	-	-
PFHpA	0.11	0.0013	0.049	<0.025	0.054	0.074	0.024	-	-
PFOA	0.051	<0.001	0.021	<0.025	0.021	0.027	0.01	220	19
PFNA	0.018	<0.001	0.0055	<0.025	0.0092	0.0091	0.0033	-	-
PFDA	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-
PFUnDA	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-
PFTrDA	-	<0.005	-	<0.1	-	<0.001	<0.001	-	-
PFTeDA	-	<0.025	-	<0.1	-	<0.001	<0.001	-	-
PFDoDA	-	<0.005	-	<0.1	<0.001	<0.001	<0.001	-	-
FOSA	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-
MeFOSA	-	<0.001	<0.005	<0.1	<0.001	<0.001	<0.001	-	-
MeFOSAA	<0.005	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-
EtFOSAA	<0.005	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-
4:2 FTS	<0.005	<0.001	-	<0.025	<0.001	-	-	-	-
6:2 FTS	0.0051	0.0016	0.017	<0.05	<0.001	0.0051	0.0022	-	-
8:2 FTS	<0.005	<0.001	<0.001	<0.1	<0.001	<0.001	<0.001	-	-
10:2 FTS	-	-	-	-	<0.001	<0.001	<0.001	-	-
FPrPA	-	-	-	-	<0.001	<0.001	<0.001	-	-
EtFOSA	-	<0.001	<0.005	<0.1	<0.001	<0.001	<0.001	-	-
EtFOSE	<0.025	<0.005	<0.005	<0.1	<0.001	<0.001	<0.001	-	-
FPePA	-	-	-	-	<0.001	<0.001	<0.001	-	-
FHpPA	-	-	-	-	<0.001	<0.001	<0.001	-	-
F-53B minor	-	-	-	-	<0.001	<0.001	<0.001	-	-
HFPO-DA	-	-	-	-	<0.001	<0.001	<0.001	-	-
Sum F-53B	-	-	-	-	<0.001	<0.001	<0.001	-	-
ADONA	-	-	-	-	<0.001	<0.001	<0.001	-	-
P37DMOA	-	-	-	-	<0.001	<0.001	<0.001	-	-
F-53B major	-	-	-	-	<0.001	<0.001	<0.001	-	-

	Parameter not tested / no guideline value available
3.6	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds 99% ecological guidelines.

Notes: 1. Results in μg/L.

<sup>2.</sup> Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZ WQG) – technical draft guideline values in PFAS National Environmental Management Plan – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

3. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

<sup>4.</sup> Total PFOS, PFHxS are calculated by summing monoethyl, dilinear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

Table E-2: Surface Water Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) <sup>1</sup>

			PFAS Samples in Surface Water					Guide	lines
Field ID	OHA ADJ SW33 8 280922	OHA SW33 050423	OHA SW33 081123	OHA SW33 090424	OHA ADJ SW36 1 220218	OHA ADJ SW36 2 170518	OHA ADJ SW36 3 120918		
Location Code	OHA ADJ SW33	OHA ADJ SW33	SW33	SW33	SW36	SW36	SW36	ANZECC 95% Species Protection -	ANZ WQG for 99% Species
Sampled Date Time	28/09/2022	5/04/2023	8/11/2023	9/04/2024	22/02/2018	17/05/2018	12/09/2018	Technical Draft Default Guideline	Protection - Technical Draft
Lab Report Number	3019751	3283482	3519861	24-100840-1	1047802	1142104	1251329	Values <sup>2</sup>	Default Guideline Values 2
Sample Results	·				•			1	
PFPrS	0.0022	0.0017	0.0017	0.0034	<0.001	<0.001	<0.001	- 1	-
PFBS	0.0051	0.0051	0.0059	0.0085	<0.001	<0.001	<0.001	- 1	-
PFPeS	0.0052	0.0048	0.0058	0.0093	<0.001	<0.001	<0.001	-	-
di-PFHxS	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-
Mono-PFHxS	0.008	0.0076	0.010	0.013	<0.001	<0.001	<0.001	- 1	-
L-PFHxS	0.044	0.049	0.056	0.075	<0.001	<0.001	<0.001	- 1	-
Total PFHxS <sup>4</sup>	0.052	0.057	0.066	0.088	<0.001	<0.001	<0.001	- 1	-
PFHpS	0.0012	0.0018	0.0022	0.0029	<0.001	<0.001	<0.001	- 1	-
di-PFOS	0.0016	0.0022	0.0025	0.0033	<0.001	<0.001	<0.001	- 1	-
Mono-PFOS	0.029	0.037	0.040	0.057	<0.001	<0.001	<0.001	- 1	-
L-PFOS	0.017	0.06	0.066	0.078	<0.001	<0.001	<0.001	-	-
Total PFOS <sup>4</sup>	0.048	0.099	0.11	0.14	<0.001	<0.001	<0.001	0.48 <sup>3</sup>	0.0091 <sup>3</sup>
Sum of PFHxS and PFOS 5	0.1	0.16	0.18	0.23	<0.001	<0.001	<0.001		-
PFECHS	<0.001	<0.001	<0.0010	<0.0050	-	-	-	- 1	-
PFBA	0.034	0.037	-	0.056	<0.005	<0.01	<0.005	- 1	-
PFPeA	0.13	0.16	0.15	0.23	<0.001	<0.001	<0.001	- 1	-
PFHxA	0.091	0.11	0.11	0.15	<0.001	<0.001	<0.001	- 1	-
PFHpA	0.037	0.043	0.047	0.070	<0.001	<0.001	<0.001		-
PFOA	0.015	0.023	0.022	0.030	<0.001	<0.001	<0.001	220	19
PFNA	0.0044	0.0087	0.0086	0.024	<0.001	<0.001	<0.001		-
PFDA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	- 1	-
PFUnDA	<0.001	<0.001	-	<0.0010	<0.001	<0.001	<0.005	- 1	-
PFTrDA	-	-	-	<0.0010	-	<0.025	<0.005	- 1	-
PFTeDA	-	<0.001	-	<0.0010	-	<0.1	-	- 1	-
PFDoDA	<0.001	<0.001	-	<0.0010	-	<0.025	<0.005	- 1	-
FOSA	<0.001	<0.001	<0.0010	<0.0010	<0.001	<0.001	<0.001	-	-
MeFOSA	<0.001	<0.001	<0.0010	<0.0010	-	<0.005	<0.005	-	-
MeFOSAA	<0.001	<0.001	-	<0.0010	<0.005	<0.001	<0.005	- 1	-
EtFOSAA	<0.001	<0.001	-	<0.0010	<0.005	<0.001	<0.005	-	-
4:2 FTS	-	<0.001	<0.0010	<0.0010	<0.005	<0.001	<0.001	-	-
6:2 FTS	0.0034	<0.001	0.0024	<0.0010	<0.005	<0.001	<0.001	-	-
8:2 FTS	<0.001	<0.001	<0.0010	<0.0010	<0.005	<0.001	<0.005	-	-
10:2 FTS	<0.001	<0.001	-	<0.0010	-	-	-	-	-
FPrPA	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-
EtFOSA	<0.001	<0.001	<0.0010	<0.0010	-	<0.001	<0.005	-	-
EtFOSE	<0.001	<0.001	<0.0010	<0.0010	-	<0.005	<0.005	-	-
FPePA	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-
FHpPA	<0.001	<0.001	-	<0.0010	-	-	-	-	-
F-53B minor	<0.001	<0.001	-	<0.0010	-	-	-	-	-
HFPO-DA	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-
Sum F-53B	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-
ADONA	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-
P37DMOA	<0.001	<0.001	-	<0.0010	-	-	-	-	-
F-53B major	<0.001	<0.001	<0.0010	<0.0010	-	-	-	-	-

<sup>4.</sup> Total PFOS, PFHxS are calculated by summing monoethyl, dilinear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value available
3.6	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds 99% ecological guidelines.

Notes: 1. Results in μg/L.

<sup>2.</sup> Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZ WQG) — technical draft guideline values in PFAS National Environmental Management Plan — Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

3. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

Table E-2: Surface Water Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) <sup>1</sup>

			PFAS Samples	in Surface Water				Guide	lines
Field ID	OHA ADJ SW36 4 290920	OHA ADJ SW36 5 160321	OHA ADJ SW36 7 291021	OHA ADJ SW36 8 280322	OHA ADJ SW36 9 290922	OHA SW36 050423	OHA SW36 081123		
Location Code	SW36	SW36	SW36	SW36	OHA ADJ SW36	OHA ADJ SW36	SW36	ANZECC 95% Species Protection -	ANZ WQG for 99% Species
Sampled Date Time	29/09/2020	16/03/2021	29/10/2021	28/03/2022	29/09/2022	5/04/2023	8/11/2023	Technical Draft Default Guideline	Protection - Technical Draft
Lab Report Number	2094717	2370192	2590570	2785749	3041553	3288819	3519864	Values <sup>2</sup>	Default Guideline Values <sup>2</sup>
Sample Results				İ				7	
PFPrS	<0.025	<0.001	0.0014	<0.001	0.0013	<0.001	<0.0010	- 1	-
PFBS	<0.025	0.0017	0.0026	0.0016	0.0029	0.0027	0.0025	-	-
PFPeS	<0.025	0.0019	0.0028	0.0015	0.003	0.0026	0.0025	-	-
di-PFHxS	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
Mono-PFHxS	<0.025	0.003	0.0039	0.0022	0.0047	0.0043	0.0045	-	-
L-PFHxS	<0.025	0.018	0.023	0.012	0.027	0.022	0.025	-	-
Total PFHxS <sup>4</sup>	<0.025	0.021	0.027	0.014	0.032	0.026	0.030	-	-
PFHpS	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
di-PFOS	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	0.0011	-	-
Mono-PFOS	<0.025	0.017	0.011	0.0061	0.015	0.01	0.015	-	-
L-PFOS	<0.025	0.016	0.0095	0.0058	0.0086	0.0075	0.016	-	-
Total PFOS <sup>4</sup>	<0.025	0.033	0.02	0.012	0.024	0.018	0.032	0.48 3	0.0091 <sup>3</sup>
Sum of PFHxS and PFOS 5	<0.025	0.054	0.047	0.026	0.056	0.044	0.062	-	-
PFECHS	-	<0.001	<0.001	<0.001	<0.001	-	<0.0010	-	-
PFBA	<0.2	0.019	0.017	0.013	0.017	0.014	-	-	-
PFPeA	<0.1	0.072	0.06	0.024	0.051	0.051	0.046	-	-
PFHxA	<0.025	0.05	0.039	0.018	0.038	0.036	0.032	-	-
PFHpA	<0.025	0.026	0.018	0.0073	0.018	0.016	0.014	-	-
PFOA	<0.025	0.012	0.0079	0.0031	0.0079	0.0064	0.0088	220	19
PFNA	<0.025	0.0048	0.0026	0.0011	0.0022	0.0029	0.0032	-	-
PFDA	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
PFUnDA	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFTrDA	<0.1	-	<0.001	<0.001	-	-	-	-	-
PFTeDA	<0.1	-	<0.001	<0.001	-	-	-	-	-
PFDoDA	<0.1	<0.001	<0.001	<0.001	-	<0.001	-	-	-
FOSA	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
MeFOSA	<0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
MeFOSAA	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	<0.025	<0.001	-	-	-	<0.001	<0.0010	-	-
6:2 FTS	<0.05	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
8:2 FTS	<0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
10:2 FTS	-	<0.001	<0.001	<0.001	-	<0.001	-	-	-
FPrPA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
EtFOSA	<0.1	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSE	<0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
FPePA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
FHpPA	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-
F-53B minor	-	<0.001	<0.001	<0.001	-	<0.001	-	-	-
HFPO-DA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
Sum F-53B	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
ADONA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-
P37DMOA	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
F-53B major	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0010	-	-

## Results in μg/L.

2. Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZ WQG) – technical draft guideline values in PFAS National Environmental Management Plan – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

3. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.
4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.
5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value available
3.6	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds 99% ecological guidelines

Table E-2: Surface Water Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) <sup>1</sup>

			PFAS Samples	in Surface Water				Guide	lines
Field_ID	OHA_SW36_100424	SW6	SW6	SW6	OHA_DPB_SW6_4_290920	OHA_DPB_SW6_6_291021	OHA_DPB_SW6_7_280322		
Location_Code	SW36	SW6	SW6	SW6	SW6	SW6	SW6	ANZECC 95% Species Protection -	ANZ WQG for 99% Species
Sampled_Date_Time	10/04/2024	4/08/2017	1/11/2017	3/07/2018	29/09/2020	29/10/2021	28/03/2022	Technical Draft Default Guideline	Protection - Technical Draft
Lab_Report_Number	24-102531-1	841470	937355	1186578	2094713	2590926	2785776	Values <sup>2</sup>	Default Guideline Values 2
Sample Results								7	
PFPrS	<0.0010	0.023	0.042	0.013	<0.025	<0.025	0.029	-	-
PFBS	0.0023	0.079	0.12	0.037	<0.025	0.053	0.063	-	-
PFPeS	0.0021	0.083	0.18	0.045	<0.025	0.057	0.092	-	-
di-PFHxS	<0.0010	0.002	0.0039	<0.001	<0.025	<0.025	0.0021	-	-
Mono-PFHxS	0.0031	0.3	0.28	0.073	0.03	0.11	0.16	-	-
-PFHxS	0.016	1.6	1.8	0.48	0.19	0.86	0.95	-	-
Total PFHxS <sup>4</sup>	0.019	1.9	2.1	0.55	0.22	0.97	1.1	-	-
PFHpS	<0.0010	0.066	0.13	0.027	<0.025	0.046	0.05	-	-
di-PFOS	<0.0010	0.036	0.096	0.013	<0.025	0.039	0.051	-	-
Mono-PFOS	0.0088	0.52	0.82	0.15	0.093	0.58	0.64	-	-
-PFOS	0.0084	0.86	1	0.21	0.13	0.83	0.69	-	-
Total PFOS <sup>4</sup>	0.017	1.4	1.9	0.37	0.22	1.4	1.4	0.48 <sup>3</sup>	0.0091 <sup>3</sup>
Sum of PFHxS and PFOS 5	0.036	<del>-</del>	-	0.92	0.44	2.4	2.5	-	-
PFECHS	<0.0020	-	-	-	-	<0.025	<0.001	- 1	-
PFBA	0.016	0.23	0.32	0.11	<0.2	0.16	0.22	- 1	-
PFPeA	0.052	1.1	1.5	0.44	0.22	0.62	0.86	- 1	-
PFHxA	0.035	1	0.96	0.32	0.14	0.39	0.62	-	-
PFHpA	0.015	0.32	0.47	0.16	0.073	0.23	0.31	-	-
PFOA	0.0067	0.61	0.73	0.19	0.065	0.34	0.36	220	19
PFNA	0.0015	0.15	0.32	0.092	0.029	0.18	0.17	-	-
PFDA	<0.0010	0.0012	0.002	0.0011	<0.025	<0.025	0.0014	-	_
PFUnDA	<0.0010	<0.005	0.0012	<0.001	<0.025	<0.025	0.0011		-
PFTrDA	<0.0010	-	-	<0.025	<0.1	<0.1	<0.001		-
PFTeDA	-	-	-	<0.1	<0.1	<0.1	<0.001	-	-
PFDoDA	<0.0010	<0.005	<0.001	<0.025	<0.1	<0.1	<0.001	-	-
FOSA	<0.0010	<0.001	0.0012	<0.001	<0.025	<0.025	<0.001	-	-
MeFOSA	-	<0.005	<0.005	<0.005	<0.1	<0.1	<0.001	-	-
MeFOSAA	<0.0010	<0.005	<0.005	<0.001	<0.025	<0.025	<0.001	-	-
EtFOSAA	<0.0010	<0.005	<0.005	<0.001	<0.025	<0.025	<0.001	-	-
4:2 FTS	<0.0010	0.0059	0.0053	<0.001	<0.025	<0.025	-	-	-
5:2 FTS	<0.0010	0.81	1.5	0.33	0.053	0.62	0.44	-	-
3:2 FTS	<0.0010	<0.005	0.0054	<0.001	<0.1	<0.1	<0.001	-	-
L0:2 FTS	<0.0010	-	-	-	-	<0.025	<0.001	-	-
FPrPA	<0.0010	-	-	-	-	<0.1	0.0022	<u> </u>	-
EtFOSA	-	<0.005	<0.005	<0.005	<0.1	<0.1	<0.001	-	
tFOSE	<0.0010	<0.005	<0.005	<0.005	<0.1	<0.1	<0.001	<u> </u>	
PePA	<0.0010	-	-	-	-	<0.025	0.005	_	-
НрРА	<0.0010	-	-	-	-	<0.025	<0.003	-	<u> </u>
F-53B minor	<0.0010	-	-	-	-	<0.025	<0.001	<u> </u>	<u> </u>
-53B IIIIIOI HFPO-DA	<0.0010	-	<u> </u>	-		<0.05	<0.001	<del>                                     </del>	<u> </u>
Sum F-53B	<0.0010	-	<u> </u>	-	-	<0.1	<0.001	<u> </u>	<u>-</u>
ADONA	<0.0010	-	<u> </u>	-	-	<0.1	<0.001	<del>                                     </del>	<u> </u>
P37DMOA	<0.0010	-	-	-	-	<0.025	<0.001	-	<u> </u>
F-53B major	<0.0010	-	-	-	<0.001	<0.05	<0.001		<u> </u>
r-330 IIIdJUI	<0.0020	l .	<u> </u>	1	<0.001	<0.1			<u> </u>

## Results in μg/L.

2. Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZ WQG) – technical draft guideline values in PFAS National Environmental Management Plan – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

3. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value availab
3.6	Concentration exceeds 95% ecological guidelines
<u>3.6</u>	Concentration exceeds 99% ecological guidelines

Table E-2: Surface Water Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) <sup>1</sup>

			PFAS Samples	in Surface Water				Guide	lines
Field_ID	OHA_DPB_SW6_8_280922	OHA_SW6_030423	OHA_SW6_071123	SW4	OHA_SHW_SW4_2_021020	OHA_SHW_SW4_3_180321	OHA_SHW_SW4_4_271021	T I	
Location Code	OHA DPB SW6	OHA DPB SW6	SW6	SW4	SW4	SW4	SW4	ANZECC 95% Species Protection -	ANZ WQG for 99% Species
Sampled_Date_Time	28/09/2022	3/04/2023	7/11/2023	4/08/2017	2/10/2020	18/03/2021	27/10/2021	Technical Draft Default Guideline	Protection - Technical Draft
Lab_Report_Number	3008365	3276244	3518234	841470	2094371	2327926	2576268	Values <sup>2</sup>	Default Guideline Values 2
Sample Results				-				1	
PFPrS	0.026	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-
PFBS	0.089	0.03	0.069	<0.001	<0.001	0.0012	<0.001	-	-
PFPeS	0.12	0.034	0.077	<0.001	<0.001	<0.001	<0.001	-	-
di-PFHxS	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-
Mono-PFHxS	0.23	0.053	0.16	<0.001	<0.001	<0.001	<0.001	-	-
L-PFHxS	1.4	0.42	0.92	<0.001	<0.001	0.005	<0.001	-	-
Total PFHxS <sup>4</sup>	1.6	0.47	1.1	<0.001	< 0.001	0.005	<0.001	-	-
PFHpS	0.061	<0.025	0.041	<0.001	<0.001	<0.001	<0.001	-	-
di-PFOS	0.059	<0.025	0.027	<0.001	<0.001	<0.001	<0.001	-	-
Mono-PFOS	0.89	0.38	0.50	<0.001	<0.001	0.0029	<0.001	-	-
L-PFOS	0.82	0.52	0.69	<0.001	<0.001	0.0036	<0.001	-	-
Total PFOS <sup>4</sup>	1.8	0.9	1.2	<0.001	<0.001	0.0065	<0.001	0.48 <sup>3</sup>	0.0091 <sup>3</sup>
Sum of PFHxS and PFOS 5	3.4	1.4	2.3	-	<0.001	0.012	<0.001		-
PFECHS	<0.025	<0.025	<0.025	-	-	<0.001	<0.001	- 1	-
PFBA	0.24	<0.1	0.24	0.0054	0.0095	0.037	0.0085	- 1	-
PFPeA	0.9	0.34	0.78	<0.001	<0.001	0.096	0.0035		-
PFHxA	0.68	0.24	0.57	<0.001	0.001	0.079	0.0016		-
PFHpA	0.38	0.15	0.28	<0.001	<0.001	0.048	0.0011		-
PFOA	0.51	0.17	0.34	<0.001	<0.001	0.013	<0.001	220	19
PFNA	0.22	0.12	0.14	<0.001	<0.001	0.0039	<0.001		-
PFDA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-
PFUnDA	<0.025	<0.025	<0.025	<0.005	<0.001	<0.001	<0.001	-	-
PFTrDA	<0.1	<0.1	<0.10	-	<0.001	<0.005	-	- 1	-
PFTeDA	<0.1	<0.1	<0.10	-	<0.001	-	-	- 1	-
PFDoDA	<0.1	<0.1	<0.10	<0.005	<0.001	<0.005	<0.001	- 1	-
FOSA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-
MeFOSA	<0.1	<0.1	<0.10	-	-	<0.005	<0.001	-	-
MeFOSAA	<0.025	<0.025	<0.025	<0.005	<0.001	<0.001	<0.001	-	-
EtFOSAA	<0.025	<0.025	<0.025	<0.005	<0.001	<0.001	<0.001	-	-
4:2 FTS	<0.025	<0.025	<0.025	<0.005	-	<0.001	-	-	-
6:2 FTS	0.7	0.14	0.35	<0.005	<0.001	0.0096	-	-	-
8:2 FTS	<0.1	<0.1	<0.10	<0.005	<0.001	<0.001	<0.001	-	-
10:2 FTS	<0.025	<0.025	<0.025	-	-	<0.001	<0.001	-	-
FPrPA	<0.1	<0.1	<0.10	-	-	<0.001	<0.001	-	-
EtFOSA	<0.1	<0.1	<0.10	-	-	<0.005	<0.001	-	-
EtFOSE	<0.1	<0.1	<0.10	<0.005	-	<0.005	<0.001	-	-
FPePA	<0.025	<0.025	<0.025	-	-	<0.001	<0.001	-	-
FHpPA	<0.025	<0.025	<0.025	-	-	<0.001	<0.001	-	-
F-53B minor	<0.05	<0.05	<0.050	-	-	<0.001	<0.001	-	-
HFPO-DA	<0.05	<0.05	<0.050	-	-	<0.001	<0.001	-	-
Sum F-53B	<0.1	<0.1	<0.10	-	-	<0.001	<0.001	-	-
ADONA	<0.025	<0.025	<0.025	-	-	<0.001	<0.001	-	-
P37DMOA	<0.05	<0.05	<0.050	-	-	<0.001	<0.001	-	-
F-53B major	<0.1	<0.1	<0.10	-	-	-	<0.001	- 1	-

## Results in μg/L.

2. Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZ WQG) – technical draft guideline values in PFAS National Environmental Management Plan – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

3. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.

4. Total PFOS, PFHxS are calculated by summing monoethyl, dimethyl and linear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value available
3.6	Concentration exceeds 95% ecological guidelines.
<u>3.6</u>	Concentration exceeds 99% ecological guidelines.

Table E-2: Surface Water Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) <sup>1</sup>

PFAS Samples in Surface Water							Guide	Guidelines	
Field_ID	OHA SHW SW4 5 300322	OHA_SHW_SW4_6_280922	OHA SW4 050423	OHA SW4 081123	OHA SW4 100424				
Location Code	SW4	OHA SHW SW4	OHA SHW SW4	SW4	SW4	1	ANZECC 95% Species Protection -	ANZ WQG for 99% Spe	
Sampled Date Time	30/03/2022	28/09/2022	5/04/2023	8/11/2023	10/04/2024	1	Technical Draft Default Guideline	Protection - Technical D	
Lab Report Number	2786753	3009070	3283471	3519870	24-103822-1	1	Values <sup>2</sup>	Default Guideline Value	
Sample Results									
PrS	<0.001	<0.001	<0.001	<0.0010	<0.0010			-	
FBS	<0.001	<0.001	<0.001	<0.0010	<0.0010	1	-	-	
FPeS	<0.001	<0.001	<0.001	<0.0010	<0.0010	1	-	-	
-PFHxS	<0.001	<0.001	<0.001	<0.0010	<0.0010	1	-	-	
ono-PFHxS	<0.001	<0.001	<0.001	<0.0010	<0.0010	1	-	-	
PFHxS	<0.001	<0.001	0.0017	<0.0010	0.0022	1	-	-	
otal PFHxS <sup>4</sup>	<0.001	<0.001	0.0017	<0.0010	0.0022	1	-	-	
HpS	<0.001	<0.001	<0.001	<0.0010	<0.0010	1	-	-	
-PFOS	<0.001	<0.001	<0.001	<0.0010	<0.0010	1	-	-	
ono-PFOS	<0.001	<0.001	0.0015	<0.0010	0.0029	1	-	-	
PFOS	<0.001	<0.001	0.0024	<0.0010	0.0072	1	-	-	
otal PFOS <sup>4</sup>	<0.001	<0.001	0.0039	<0.0010	0.010	1	0.48 3	0.0091 3	
um of PFHxS and PFOS 5	<0.001	<0.001	0.0056	<0.0010	0.012	1	-	- 0.0091	
ECHS	<0.001	<0.001	<0.001	<0.0010	0.0077	-		-	
BA	0.0061	0.008	0.0091	-	0.019	-		-	
PeA	0.0001	0.0018	0.014	<0.0010	0.023	-	-	-	
HxA	<0.0013	<0.0018	0.0096	<0.0010	0.012	-	-	-	
HpA	<0.001	<0.001	0.0054	<0.0010	0.0063	-	_	-	
OA	<0.001	<0.001	0.0022	<0.0010	0.0038	-	220	19	
-NA	<0.001	<0.001	0.0022	<0.0010	0.0029	-	-	- 15	
-DA	<0.001	<0.001	<0.0014	<0.0010	<0.0010	-	-	-	
UnDA	<0.001	<0.001	<0.001	-	<0.0010	-	-	-	
TrDA	<0.001	-		-	-	-	-	-	
TeDA	<0.001	-		-	<u>-</u>	-	-	-	
FDoDA	<0.001	<0.001	<del>-</del>	_	<0.0010	-	-		
OSA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-		
IeFOSA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	-	
1eFOSAA	<0.001	<0.001	<0.001	-	<0.0010	-	-		
tFOSAA	<0.001	<0.001	<0.001	-	<0.0010	-	-		
2 FTS		-	-	<0.0010	<0.0010	-	-		
2 FTS	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-		
2 FTS	<0.001	<0.001	<0.001	<0.0010	<0.0010	-			
2 FTS	<0.001	<0.001		-	-	-	-		
7.2 F13	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-		
FOSA	<0.001	<0.001	<0.001	<0.0010	-	-	-		
FOSE	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-		
rePA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-	-	<u> </u>	
pPA	<0.001	<0.001	<0.001	-	- 0.0010	-	-	<u> </u>	
53B minor	<0.001	<0.001	- <0.001	-	<0.0010	-		<u> </u>	
PO-DA	<0.001		<0.001		<0.0010	-	-		
		<0.001		<0.0010		-			
im F-53B	<0.001	<0.001	<0.001	<0.0010	<0.0020	-		-	
OONA	<0.001	<0.001	<0.001	<0.0010	<0.0010	-		-	
37DMOA	<0.001	<0.001	<0.001			-	-	-	
-53B major	<0.001	<0.001	<0.001	<0.0010	<0.0020		-	-	

<sup>4.</sup> Total PFOS, PFHxS are calculated by summing monoethyl, dilinear isomers. Where an isomer is below the detection limit it is not added to the summation. This is following the method in the reported lab results.

5. Summations are made by adding compounds Total PFOS, Total PFHxS together. Where one compound is below detection, it is not included in the summation.

-	Parameter not tested / no guideline value available
3.6	Concentration exceeds 95% ecological guidelines.
3.6	Concentration exceeds 99% ecological guidelines.

Notes: 1. Results in μg/L.

<sup>2.</sup> Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZ WQG) – technical draft guideline values in PFAS National Environmental Management Plan – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.

3. ANZG 2023, Toxicant default guideline values for aquatic ecosystem protection: Perfluorooctane sulfonate (PFOS) in freshwater. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. CC BY 4.0. Australian and New Zealand Governments and Australian state and territory governments, Canberra, ACT, Australia.









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