OHAKEA: SURFACE WATER AND GROUNDWATER MONITORING FOR PFAS, October 2021

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Lizzie Daly
Science Manager

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Prepared by:

Tim Barlow, Environmental Geologist Pattle Delamore Partners Ltd.

PATTLE DELAMORE PARTNERS LTD
Level 5, PDP House
235 Broadway, Newmarket, Auckland 1023
PO Box 9528, Auckland 1149, New Zealand

Office +64 9 **523 6900**
Web **www.pdp.co.nz**
Auckland Tauranga Hamilton Wellington
Christchurch Invercargill

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10 June 2022

Kate Leydon
Senior Environmental Officer
New Zealand Defence Force
Linton Military Camp
PALMERSTON NORTH

Stephen Collins
Scientist – Groundwater
Horizons Regional Council
PALMERSTON NORTH

Dear Kate and Stephen

OHAKEA: SURFACE WATER AND GROUNDWATER MONITORING FOR PFAS, OCTOBER 2021

1.0 Introduction

Monitoring for per- and polyfluoroalkyl substances (PFAS) concentrations in groundwater and surface water was conducted between 26 and 29 October 2021 in accordance with the RNZAF Base Ohakea PFAS Investigation: Long Term Monitoring Plan (LTMP) (PDP, 2020a). This is the third round of monitoring to be conducted following the implementation of the LTMP (PDP, 2020a). Previous monitoring rounds, undertaken in October 2020 and March 2021, are reported in PDP (2020b) and PDP (2021), 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 19 groundwater wells or taps;
- The collection of surface water from 4 locations;
- The collection of 11 quality assurance/quality control (QA/QC) samples, including interlab analysis of two duplicate samples; and
- Preparation of this report.

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

2.0 Methodology

2.1 Sampling Methodology

Sampling was undertaken by PDP field staff between 26 and 29 October 2021. Sampling was undertaken in accordance with procedures in Sampling and Analysis of Per- and Poly-fluorinated Substances (MfE, 2018).

All samples were couriered to AsureQuality laboratory under chain of custody documentation following collection. All samples were analysed by AsureQuality for a suite of PFAS compounds. Two inter-laboratory duplicates were couriered to Eurofins laboratories and analysed 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: Groundwater Monitoring Locations

Location		Rationale	Sampled
RNZAF Base Ohakea	MW4	Key source area (historic fire training area (FTA))	27/10/21
	WS1	Downgradient of FTA and near site boundary with a long existing monitoring record	27/10/21
	GW6	Downgradient of key source areas and historically elevated PFAS concentrations	28/10/21
	MW6	Key source area (run-up pit)	27/10/21
	MW9	Key source area (diversion tank for hangar deluge systems)	27/10/21
	WS2	North western plume edge (base drinking water supply)	28/10/21
	GW111.1	Downgradient of FTA.	28/10/21
	GW111.2	Downgradient of FTA. Deeper well (~40 m) to monitor the vertical extent of PFAS.	28/10/21
	GW111.3	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.	28/10/21
Other (non-NZDF) private and public land	GW67	North eastern plume edge	27/10/21
	GW31	Eastern plume edge	29/10/21
	GW53	Eastern plume edge	29/10/21
	GW65	Southern plume edge	29/10/21
	GW106	Plume is predicted to approach and then encompass the proposed shallow well into the future.	29/10/21
	GW107	Act as a sentinel monitoring location e.g., to monitor the predicted maximum lateral edge of the future plume.	29/10/21
	GW108	Plume is predicted to approach and then encompass the proposed shallow well into the future.	29/10/21
	GW109	Plume is predicted to approach and then encompass the proposed shallow well into the future.	29/10/21
	GW112.1	Well near the centre of the main plume.	28/10/21
	GW112.2	Well near the centre of the main plume. Deeper well (~55 m) to monitor the vertical extent of PFAS.	26/10/21

Table 2: Surface Water Monitoring Locations		
Location	**Rationale**	**Sampled**
SW6	Previous high PFAS concentrations leaving the base	29/10/21
SW33	Resurgence of high PFAS concentrations on the Makowhai Stream downstream of the base. Accessible from the road.	29/10/21
SW36	Makowhai Stream just upstream from confluence with the Rangitikei River. To assess the maximum extent of PFAS in the Makowhai.	29/10/21
SW4	Upstream location to assess whether PFAS is present in the Makowhai before entering the base boundary.	27/10/21

2.2 Variations from the Monitoring Plan

There were no variations from the monitoring plan; all samples were able to be collected during the October 2021 monitoring round.

2.3 Field Measurements

2.3.1 Water Level Measurement

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), to continuously record groundwater pressures (levels) in the monitoring wells. Data will be collected from the loggers during the March monitoring round.

2.3.2 Field Parameters

Using a YSI ProDSS multi-meter, and in accordance with MfE (2018), field measurements were recorded for the following stabilisation criteria: electrical conductivity, pH, dissolved oxygen, oxidation reduction potential, temperature and turbidity. Prior to use, the ProDSS was calibrated for pH and electrical conductivity and checked 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 2,5 mm, with no rain falling in the few days leading up to sampling. The Rangitikei River and surrounding streams where surface water samples were collected were low and clear during the sampling round. The stream at SW4 was observed to be flowing during this visit, although very slowly, which allowed for a sample to be collected.

2.5 Quality Assurance Sampling

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

- Two duplicate samples for inter-laboratory comparison.
- Three duplicate samples for intra-laboratory comparison.
- 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 methodology outlined in MfE (2018). All analysis of the QA/QC samples was undertaken by AsureQuality Laboratory in Wellington, this is with the exception of the two inter-laboratory duplicates which were analysed by Eurofins Laboratories in Australia. The results of QA/QC sampling are reported in Appendix D and further discussed in Section 3.3.

3.0 Sample Results and Comparison with Selected Guideline Values

3.1 Selected Guideline Values

Table 5 below shows the reference guideline values against which the results have been compared.

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	-	-	MoH[1] AGDoH[2]
Ecological Freshwater Guideline 90% ecosystem protection	-	632 µg/L	-	2 µg/L	HEPA[3]
Ecological Freshwater Guideline 95% ecosystem protection	-	220 µg/L	-	0.13 µg/L	HEPA[3]
Ecological Freshwater Guideline – 99% ecosystem protection	-	19 µg/L	-	0.00023 µg/L	HEPA[3,4]

Notes:

1. *Ministry of Health (MoH, 2021) Interim Guidance Level for Drinking Water, PFOA, PFOS and PFHxS.*
2. *Australian Government Department of Health (AGDoH, 2017) Health Based Guidance Values for PFAS for Use in Site Investigations in Australia.*
3. *Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan Version 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.*
4. *The 99% ecosystem protection guideline has been shown for completeness. However, this guideline has not been compared to in the results.*

3.2 Sample Results and Comparison to Guideline Values

The analysis and discussion of sample results relates to concentrations of total perfluorooctane sulfonate (PFOS), total perfluorohexane sulfonate (PFHxS), the Sum of Total PFOS + PFHxS and perfluorooctanoic acid (PFOA). 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 shown in Figure 1.

3.2.1 Groundwater Monitoring Wells

The results of the laboratory analyses for the core PFAS compounds in groundwater samples collected in October 2021 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 (October 2021 Sampling Round)			
	Core PFAS Compounds (µg/L)		
Location	**Sum of Total PFOS + PFHxS**	**PFOA**	**Total PFOS**
WS1	0.18	0.029	<0.025
WS2	0.0055	0.0016	0.0011
MW4	2.6	0.38	1.9
GW6	0.03	0.0019	0.014
MW6	14	0.97	7.5
MW9	1.9	0.47	1.0
GW111.1	0.59	0.13	0.36
GW111.2	0.0012	<0.001	0.0012
GW111.3	0.0021	<0.001	0.0021
GW31	0.11	0.016	0.039
GW53	<0.001	<0.001	<0.001
GW65	<0.001	<0.001	<0.001
GW67	<0.001	<0.001	<0.001
GW106	<0.001	<0.001	<0.001
GW107	<0.001	<0.001	<0.001
GW108	<0.001	<0.001	<0.001
GW109	<0.001	<0.001	<0.001
GW112.1	0.66	0.094	0.36
GW112.2	<0.001	<0.001	<0.001
Guideline Values	**Sum of Total PFOS + PFHxS**	**PFOA**	**Total PFOS**
Drinking Water [1,2]	0.07 µg/L	0.56 µg/L	-
Ecological Freshwater Guideline 90% ecosystem protection [3]	-	632 µg/L	2 µg/L
Ecological Freshwater Guideline 95% ecosystem protection [3]	-	220 µg/L	0.13 µg/L

Notes:

1. *Ministry of Health (MoH, 2021) Interim Guidance Level for Drinking Water, PFOA, PFOS and PFHxS.*
2. *Australian Government Department of Health (AGDoH, 2017) Health Based Guidance Values for PFAS for Use in Site Investigations in Australia.*
3. *Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan Version 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.*

For the October 2021 monitoring round a total of 19 groundwater samples were collected. The analytical results are summarised as follows:

- The Sum of Total PFOS + PFHxS was reported above the MOH interim drinking water guideline value (DWG) of 0.07 µg/L at seven locations. These include: MW4 (2.6 µg/L), MW6 (14 µg/L), MW9 (1.9 µg/L), WS1 (0.18 µg/L), GW31 (0.11 µg/L), GW111.1 (0.59 µg/L) and GW112.1 (0.66 µg/L). None of these wells are currently used for drinking water supply.
- The concentration of PFOA in MW6 (0.97 µg/L) exceeded the MOH interim drinking water guideline value (DWG) of 0.07 µg/L.
- Concentrations of Total PFOS exceeded the ANZECC ecological guideline value of 0.13 µg/L for the protection of 95% of freshwater species (95% EGV) at four locations. These include: MW4 (1.9 µg/L), MW6 (7.5 µg/L), MW9 (1.0 µg/L), GW111.1 (0.36 µg/L) and GW112.1 (0.36 µg/L).
- The concentration of Total PFOS in MW6 (7.5 µg/L) also exceeded the ANZECC ecological guideline value of 2 µg/L for the protection of 90% of freshwater species (90% EGV).
- The core PFAS compounds were detected at concentrations above the laboratory limit of reporting (LOR) but below the relevant guideline values at four locations (WS2, GW6, GW111.2 and GW111.3).
- The core PFAS compounds were not reported (i.e., below the laboratory LOR) at eight locations (GW53, GW65, GW67, GW106, GW107, GW108, GW109, and GW112.2).

3.2.2 Surface Water

The results of the laboratory analyses for the core PFAS compounds in surface water samples collected in October 2021 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 (October 2021 Sampling Round)			
	Core PFAS Compounds (µg/L)		
Location	**Sum of Total PFOS + PFHxS**	**PFOA**	**Total PFOS**
SW4	<0.001	<0.001	<0.001
SW6	2.4	0.34	1.4
SW33	0.18	0.027	0.089
SW36	0.047	0.0079	0.02
Guideline Values	**Sum of Total PFOS + PFHxS**	**PFOA**	**Total PFOS**
Ecological Freshwater Guideline 80% ecosystem protection [1]	-	1824 µg/L	31 µg/L
Ecological Freshwater Guideline 90% ecosystem protection [1]	-	632 µg/L	2 µg/L
Ecological Freshwater Guideline 95% ecosystem protection [1]	-	220 µg/L	0.13 µg/L

Notes:

1. *Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan Version 2.0 – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.*

For the October 2021 monitoring round 4 surface water samples were collected. The analytical results are summarised as follows:

- The concentration of Total PFOS in SW6 (1.4 µg/L) also exceeded the 95% EGV of 0.13 µg/L.
- The core PFAS compounds were detected at concentrations above the laboratory limit of reporting (LOR) but below the relevant guideline values at three locations (SW4, SW33 and SW36).

3.3 Quality Assurance/Quality Control Programme

In order 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 two blind inter-laboratory duplicates ranged from 0 to 33% which is within the acceptable %RPD for duplicate samples.
- No PFAS compounds were reported above the LOR in the primary sample or in the blind inter-laboratory duplicates. Therefore, %RPD was 0, the results of the primary sample and one duplicate are presented in Table D-3, Appendix D.

- No PFAS compounds were detected above the laboratory LOR in the field blank samples or the equipment rinsate blanks.
- The results of QA/QC assessment meet the data quality objectives for the sampling programme.

4.0 Discussion

4.1 Groundwater

In general, PFAS concentrations for the October 2021 monitoring round are within the historical ranges previously recorded at these locations. A comparison of the sum of PFOS and PFHxS over time at select sampling locations is 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 MW6 have increased compared to the historical low recorded in the March 2021 monitoring round.
- At MW9, concentrations of the core PFAS compounds remain at a similar level to those recorded in March 2021.
- At WS1, WS2, GW6 and MW4, concentrations of the core PFAS compounds remain within their historical ranges.
- This was the second monitoring round at GW111.1 and GW111.3 and the third round at GW111.2. PFAS was recorded in all three wells:
  - The Sum of Total PFOS + PFHxS in GW111.1 (0.59 µg/L) has increased compared to the March 2021 monitoring round.
  - This is the first round that the Sum of Total PFOS + PFHxS was reported above the LOR in GW111.2 and GW111.3. The concentrations are very low and close to the LOR. Although the reasons for these detections are unknown, it is considered unlikely they are representative of the aquifer conditions. This is because the first two rounds of sampling from GW111.2 and the first round of sampling from GW111.3 did not detect PFAS above the LOR, and it is considered unlikely that there has been a significant change in the groundwater flow regime to have resulted in PFAS being drawn down to these depths.

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 (screened from 6.5 to 8.0 m deep) the core PFAS compounds remain within their historical ranges, with the Sum of Total PFOS + PFHxS exceeding the DWG.
- This was the second monitoring round at GW112.1 and GW112.2.
  - In contrast to the March 2021 monitoring round, PFAS was reported above the LOR in the shallow well GW112.1 (screened from 3.5 to 9.5 m bgl). This result is more in line with the output from the PFAS groundwater model which predicted concentrations of the Sum of Total PFOS + PFHxS at this location and depth were ~0.8 µg/L to 1.4 µg/L.

- In contrast to the March 2021 monitoring round the core PFAS compounds were not detected above the LOR in the sample from the deeper well GW112.2 (screened from 51.28 to 54.28 m bgl). In October 2021, 6:2FTS was the only compound reported above the LOR in the sample from GW112.2.
- It is not known why the results for the March 2021 and October 2021 have reversed, however it is presumed that the March 2021 samples were inadvertently switched 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.

Wells GW53, GW65, GW67 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.
- At GW67, the core PFAS compounds have not been reported above the LOR in any of the samples collected in 2020 and 2021.

A comparison of the sampling results to the PFAS groundwater model (PDP, 2019) developed for the area continues to show relatively good agreement (refer to Appendix F). In particular, the October 2021 results agreed with the model prediction for GW106 (no PFAS detected) and GW112 (PFAS present in the shallow aquifer but not the deeper aquifers). At GW111, PFAS was predicted by the model to be present in the shallow aquifer but not the deeper aquifer. As noted in Section 4.1.1, very low concentrations of PFAS were detected in both GW111.2 and GW111.3. These results are unexpected and the reason for this is currently unknown. Further sampling as scheduled in the LTMP will help to determine if these results are sampling or laboratory related or represent actual groundwater conditions.

4.1.3 Transect

At the Clients' request, 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[1]. 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 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 three rounds of sampling are shown (note that there are only two rounds of data for GW111.1 and GW112.1). As expected, the plot shows the concentration of sum of PFOS + PFHxS generally decreases with distance away from the Base.

4.2 Surface Water

The concentrations of the core PFAS compounds in the sample collected from SW33 in October 2021 were similar to the previous monitoring round.

During the March 2021 monitoring round, samples from SW4 and SW36 reported concentrations of the core PFAS compounds above the laboratory LOR for the first time. The sample collected from SW4 as collected from a stagnant pool. PFAS was not reported in the sample collected from SW4, from flowing water, in October 2021. PFAS was reported above the LOR in the sample collected from SW36 at similar concentrations to the March 2021 sampling round, below the relevant guideline values.

[1] 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.

SW6 was unable to be collected during the March 2021 monitoring round (due to dry conditions). A sample was collected in October 2021, the sample result was an order of magnitude higher than the previous sample collected in September 2020, but within the range samples collected previously (August and November 2017).

The results from the October 2021 surface water sampling are generally in agreement with those predicted by the PFAS groundwater model.

5.0 Summary and Recommendations

Monitoring for per- and poly-fluoroalkyl substances (PFAS) in groundwater and surface water was conducted between 26 and 29 October 2021 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:

- Similar to the March 2021 monitoring round, PFAS has been detected at levels above the guideline values in seven groundwater samples collected in October 2021:
  - Two off-base groundwater samples exceed the MOH interim drinking water guideline (these groundwater wells are not currently being used for drinking water supply), and the ANZECC ecological guideline value for the protection of freshwater species at the 95% level.
  - Five on-base groundwater samples exceed the MOH interim drinking water guidelines (none of the wells are used for drinking water supply), and the ANZECC ecological guideline value for the protection of freshwater species at the 95% level. One of these samples also exceed the ANZECC guideline value for 90% species protection.

A comparison of the October 2021 monitoring results with those from previous monitoring rounds shows the current concentrations are generally within the historic ranges recorded for these locations.

The surface water and groundwater results from the October 2021 monitoring round are in relatively good agreement with the PFAS groundwater model predictions (PDP, 2019a). The results received for GW112 were as expected, with PFAS present in the shallow well but (with the exception of a very low concentration of 6:2FTS) not reported in the deeper well. Sum of Total PFOS + PFHxS was reported above the LOR in GW111.2 and GW111.3. The concentrations are very low and close to the LOR. Although the reasons for these detections are unknown, it is considered unlikely they are representative of the aquifer conditions. This is because the first two rounds of sampling from GW111.2 and the first round of sampling from GW111.3 did not detect PFAS above the LOR, and it is considered unlikely that there has been a significant change in the groundwater flow regime to have resulted in PFAS being drawn down to these depths.

No changes to the LTMP are recommended at this time.

6.0 References

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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 and Horizons Regional Council. 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.

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Yours faithfully

PATTLE DELAMORE PARTNERS LIMITED

Prepared by

pp

Tim Barlow

Environmental Geologist

Reviewed by

James Conway

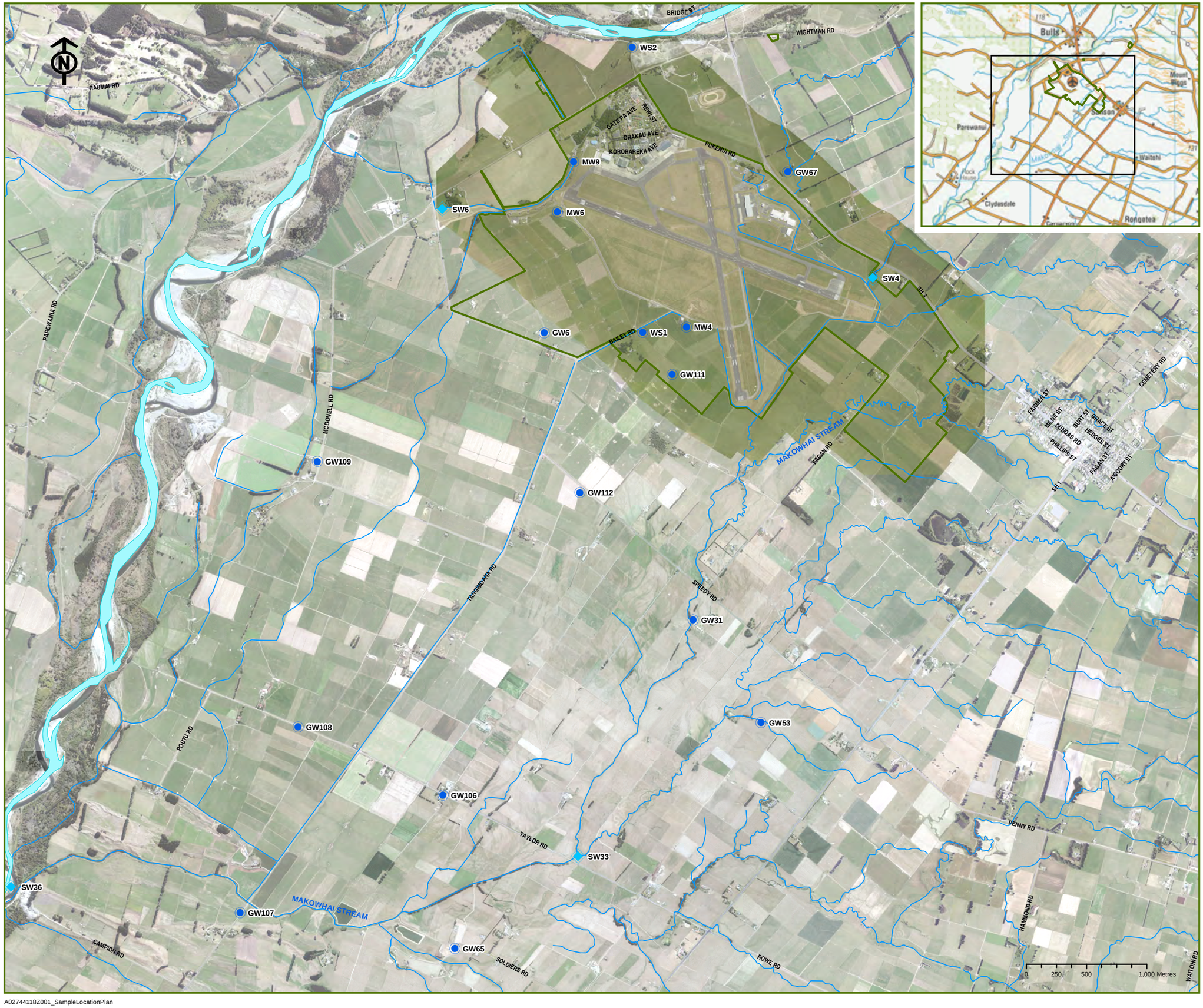
Service Leader – Contaminated Land

Approved by

Nerena Rhodes

Technical Director – Contaminated Land

Copy to: Stephen Collins
Scientist - Groundwater
Horizons Regional Council
PALMERSTON NORTH



TE OPE KĀTUA O AOTEAROA
DEFENCE FORCE

horizons
REGIONAL COUNCIL

KEY :

Sample Type:

- Groundwater
- Surface water
- River/Streams/Drains
- RNZAF Base Ohakea Boundary

SOURCE:
Aerial imagery flown 2015-16 and 2019, supplied by NZDF.
Cadastral andTopographic information supplied by LINZ.

NO.	REVISION HISTORY	DATE
A	FINAL	JUN 2022
A	ISSUED FOR REVIEW	DEC 2021

pdp

PROJECT NAME:

RNZAF BASE OHAKEA
PFAS INVESTIGATION:
LONG TERM
MONITORING PLAN

FIGURE TITLE:

SAMPLE LOCATION PLAN:
OCTOBER 2021

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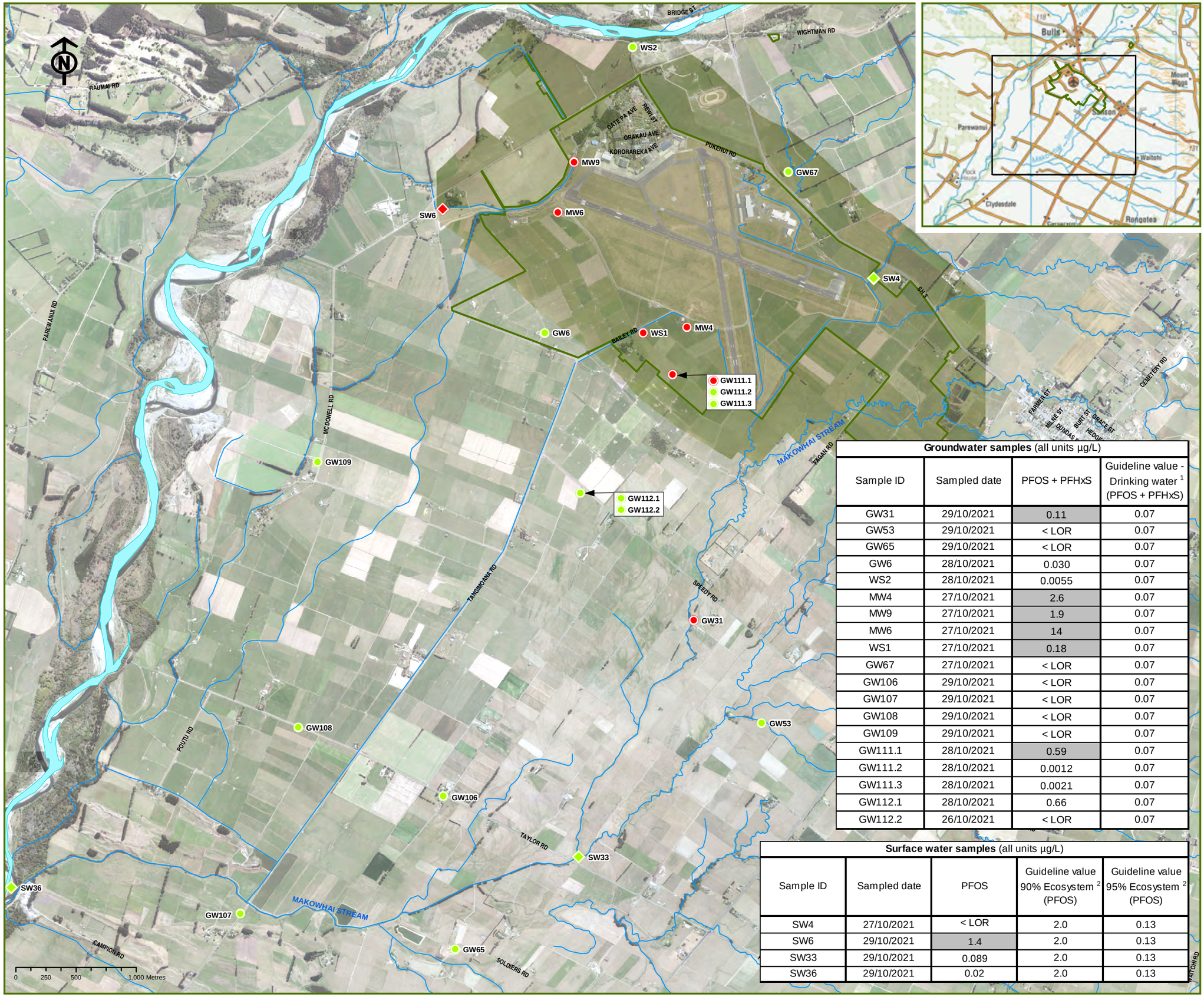
A02744118Z001_SampleLocationPlan



Groundwater samples (all units µg/L)

Sample ID	Sampled date	PFOS + PFHxS	Guideline value - Drinking water [1] (PFOS + PFHxS)
GW31	29/10/2021	0.11	0.07
GW53	29/10/2021	< LOR	0.07
GW65	29/10/2021	< LOR	0.07
GW6	28/10/2021	0.030	0.07
WS2	28/10/2021	0.0055	0.07
MW4	27/10/2021	2.6	0.07
MW9	27/10/2021	1.9	0.07
MW6	27/10/2021	14	0.07
WS1	27/10/2021	0.18	0.07
GW67	27/10/2021	< LOR	0.07
GW106	29/10/2021	< LOR	0.07
GW107	29/10/2021	< LOR	0.07
GW108	29/10/2021	< LOR	0.07
GW109	29/10/2021	< LOR	0.07
GW111.1	28/10/2021	0.59	0.07
GW111.2	28/10/2021	0.0012	0.07
GW111.3	28/10/2021	0.0021	0.07
GW112.1	28/10/2021	0.66	0.07
GW112.2	26/10/2021	< LOR	0.07

Surface water samples (all units µg/L)

Sample ID	Sampled date	PFOS	Guideline value 90% Ecosystem [2] (PFOS)	Guideline value 95% Ecosystem [2] (PFOS)
SW4	27/10/2021	< LOR	2.0	0.13
SW6	29/10/2021	1.4	2.0	0.13
SW33	29/10/2021	0.089	2.0	0.13
SW36	29/10/2021	0.02	2.0	0.13

TE OPE KĀTUA O AOTEAROA DEFENCE FORCE

horizons REGIONAL COUNCIL

Above relevant guidelines

- Groundwater
- Surface water

Below relevant guidelines

- Groundwater
- Surface water
- River/Streams/Drains
- RNZAF Base Ohakea Boundary
- <LOR — Below laboratory limit of reporting.
- Concentration Exceeds Relevant Guideline

NOTE:Groundwater wells are not currently used for drinking water supply.

GUIDELINES USED:
1. Interim Guidance Level for Drinking Water (MoH, 2017). Sourced from Australian Government Department of Health - Health Based Guidance Values for PFAS (2017).
2. Draft ANZECC Australian and New Zealand Water Quality Guidelines reported in PFAS National Environmental Management Plan (HEPA 2020).

SOURCE:
Aerial imagery flown 2015-16 and 2019, supplied by NZDF.
Cadastral andTopographic information supplied by LINZ.

NO.	REVISION HISTORY	DATE
A	FINAL	JUN 22
A	ISSUED FOR REVIEW	DEC 21

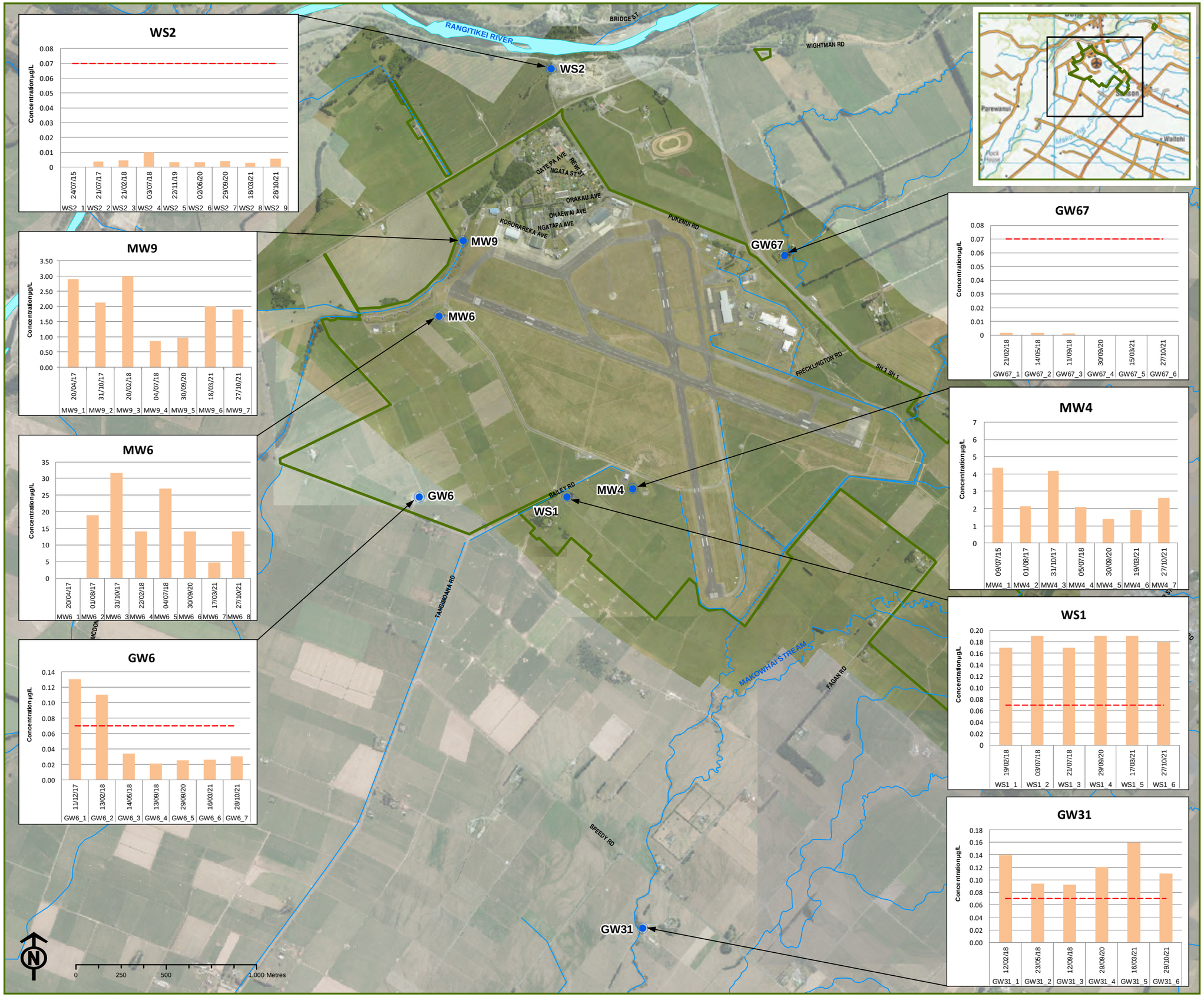
pdp

PROJECT NAME:
RNZAF BASE OHAKEA PFAS INVESTIGATION: LONG TERM MONITORING PLAN

FIGURE TITLE:
SAMPLE EXCEEDENCES OCTOBER 2021

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

A02744118Z002_SampleExceedences



TE OPE KĀTUA O AOTEAROA
DEFENCE FORCE

horizons
REGIONAL COUNCIL

MAP KEY :

Sample Type:

- Groundwater
- River/Streams/Drains
- RNZAF Base Ohakea Boundary

CHART KEY:

- Sum of PFOS+PFHxS (µg/L)
- Guidance Value for Sum of PFOS+PFHxS (µg/L)

NOTE:
1. Only sample locations with five or more sampling rounds have been shown.

2. The interim drinking water guideline is only shown for sample locations that are currently, or were historically used as a potable supply.

SOURCE:
Aerial imagery flown 2019, supplied by NZDF, and 2015-2016 provided by LINZ.
Cadastral andTopographic information supplied by LINZ.

NO.	REVISION HISTORY	DATE
A	FINAL	JUL 2022
A	ISSUED FOR REVIEW	FEB 2022

pdp

PROJECT NAME:

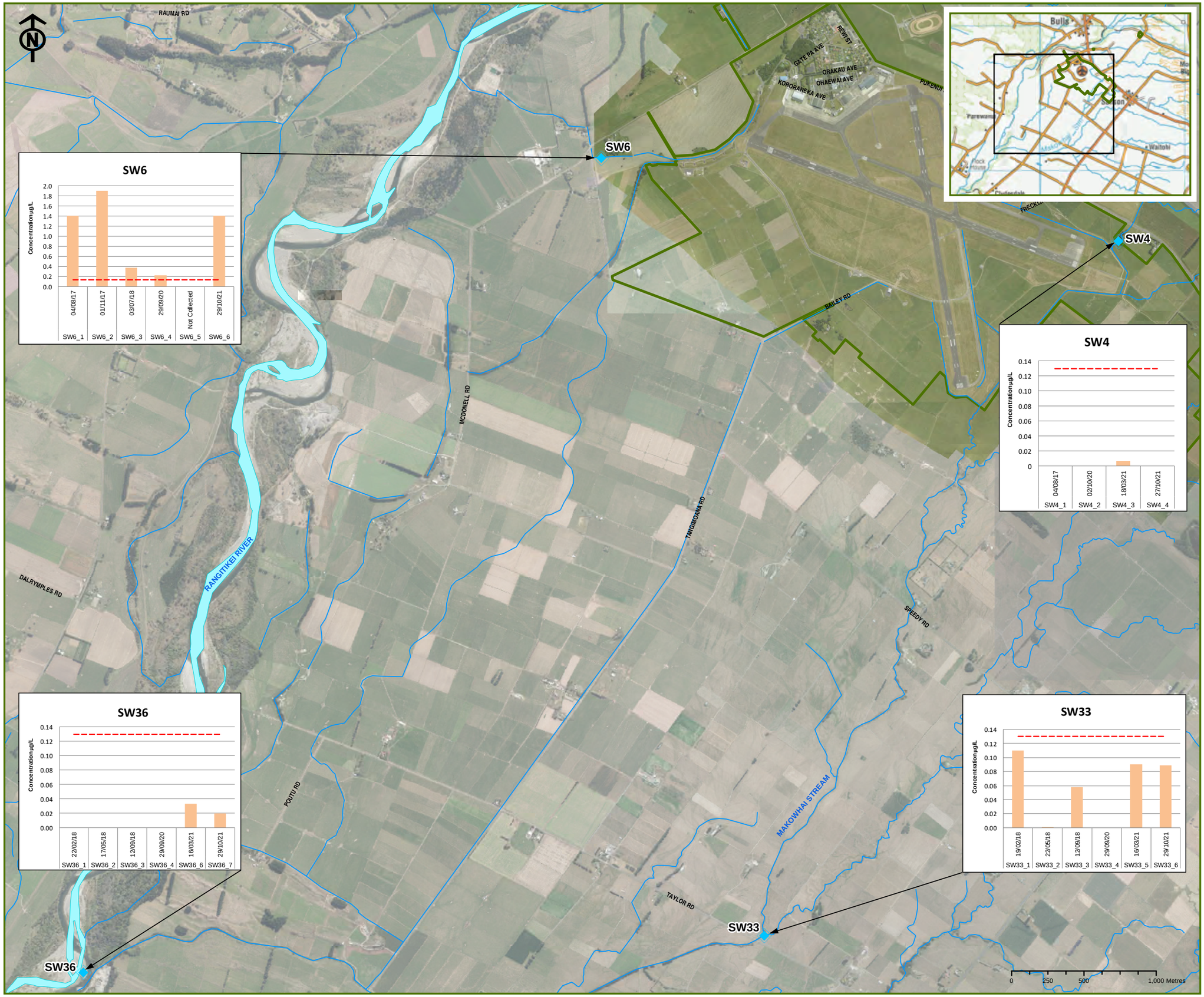
RNZAF BASE OHAKEA
PFAS INVESTIGATION:
LONG TERM
MONITORING PLAN

FIGURE TITLE:

GROUNDWATER:
CONCENTRATIONS OF
PFOS+PFHXS OVER TIME
FOR SELECT LOCATIONS:
OCTOBER 2021

SCALE:	FIGURE NO.:	ISSUE NO.:
1:20,000 (A3)	3A	A

A02744118Z003_Time_Series_GW



TE OPE KĀTUA O AOTEAROA
DEFENCE FORCE

horizons
REGIONAL COUNCIL

MAP KEY :

Sample Type:

- Surface water
- River/Streams/Drains
- RNZAF Base Ohakea Boundary

CHART KEY:

- Total PFOS (µg/L)
- ANZECC 95% Draft Guideline for Total PFOS (µg/L)

NOTE: Only sample locations with four or more sampling rounds have been shown

SOURCE:
Aerial imagery flown 2019, supplied by NZDF, and 2015-2016 provided by LINZ.
Cadastral andTopographic information supplied by LINZ.

NO.	REVISION HISTORY	DATE
A	FINAL	JUN 2022
A	ISSUED FOR REVIEW	FEB 2022

pdp

PROJECT NAME:

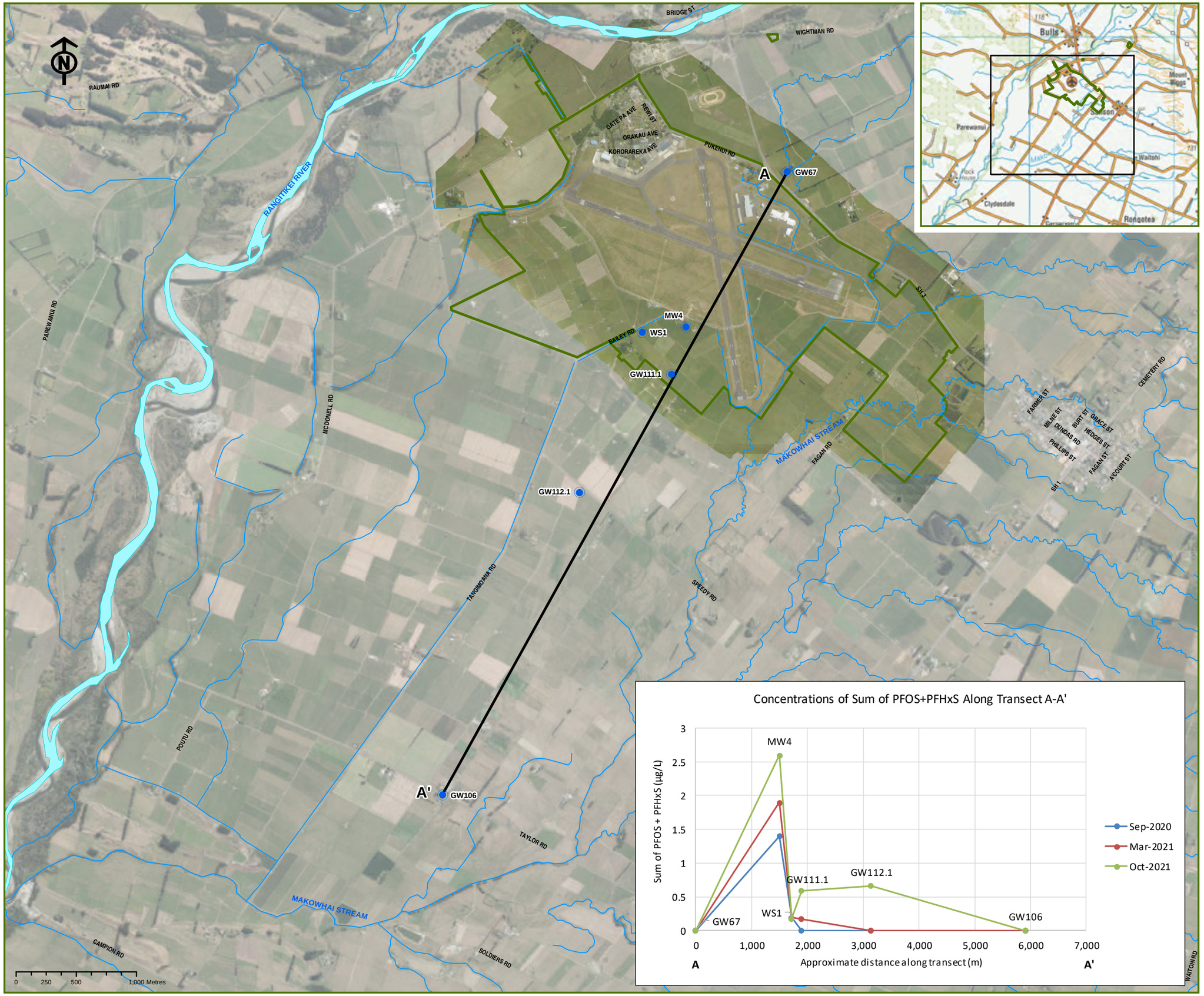
RNZAF BASE OHAKEA
PFAS INVESTIGATION:
LONG TERM
MONITORING PLAN

FIGURE TITLE:

SURFACE WATER:
CONCENTRATIONS OF
PFOS+PFHXS OVER TIME
FOR SELECT LOCATIONS:
OCTOBER 2021

SCALE:	FIGURE NO.:	ISSUE NO.:
1:25,000 (A3)	3B	A

A02744118Z004_Time_Series_SW



TE OPE KĀTUA O AOTEAROA
DEFENCE FORCE

horizons
REGIONAL COUNCIL

KEY :

Sample Type:

- Groundwater
- Surface water
- River/Streams/Drains
- RNZAF Base Ohakea Boundary

SOURCE:
Aerial imagery flown 2019, supplied by NZDF, and 2015-2016 provided by LINZ.
Cadastral andTopographic information supplied by LINZ.

NO.	REVISION HISTORY	DATE
A	FINAL	JUN 2022
A	ISSUED FOR REVIEW	FEB 2022

pdp

PROJECT NAME:

RNZAF BASE OHAKEA
PFAS INVESTIGATION:
LONG TERM
MONITORING PLAN

FIGURE TITLE:

GROUNDWATER
TRANSECT LINE

SCALE:	FIGURE NO.:	ISSUE NO.:
1:30,000 (A3)	4	A

A02744118Z005_Transect

Appendix A: Lab Reports and COCs

AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744119
Amended Report

Kate Walker
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 03-Dec-2021 **AsureQuality Reference: 21-303401** **Sample(s) Received:** 28-Oct-2021 13:35

Testing Period: 30-Oct-2021 to 02-Nov-2021
Date of analysis is available on request.

Comments

Amended Report: Customer Sample Name was amended.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW67_6_271021 **Lab ID:** 21-303401-1

Sample Condition: Acceptable **Sampled Date**: 27-Oct-2021

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	NR	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)

AsureQuality 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's standard terms of business apply to the analysis set out in this report.

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Report Number 2618128 cancels Report Number 2576273.

Test	Result	Unit	Method Reference
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	<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	NR	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	82	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	99	%	AsureQuality Method (LC-MS/MS)
M8PFOS	112	%	AsureQuality Method (LC-MS/MS)
M4PFBA	29 (R)	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	46	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	57	%	AsureQuality Method (LC-MS/MS)
MPFHpA	74	%	AsureQuality Method (LC-MS/MS)
M8PFOA	81	%	AsureQuality Method (LC-MS/MS)
M9PFNA	95	%	AsureQuality Method (LC-MS/MS)
M6PFDA	99	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	92	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	125	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	129	%	AsureQuality Method (LC-MS/MS)
MPFOSA	89	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	67	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	74	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	102	%	AsureQuality Method (LC-MS/MS)

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Report Number 2618128 cancels Report Number 2576273.

Test	Result	Unit	Method Reference
DNMeFOSAA	91	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	82	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	82	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	190 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	221 (R)	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	114	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	65	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: Duplicate of 21-303401-1A **Lab ID:** 21-303401-2

Sample Description: OHA_ADJ_GW67_6_271021 Duplicate

Sample Condition: Acceptable **Sampled Date**: 27-Oct-2021

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	NR	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	<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)

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	NR	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	80	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	96	%	AsureQuality Method (LC-MS/MS)
M8PFOS	106	%	AsureQuality Method (LC-MS/MS)
M4PFBA	28 (R)	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	43	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	58	%	AsureQuality Method (LC-MS/MS)
MPFHpA	68	%	AsureQuality Method (LC-MS/MS)
M8PFOA	79	%	AsureQuality Method (LC-MS/MS)
M9PFNA	91	%	AsureQuality Method (LC-MS/MS)
M6PFDA	91	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	102	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	149	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	313 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	91	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	114	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	112	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	87	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	122	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	105	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	182 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	216 (R)	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	74	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

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Report Number 2618128 cancels Report Number 2576273.

QC Results

Blank

Relates to sample(s) 21-303401-1, 21-303401-2

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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	<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)

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Report Number 2618128 cancels Report Number 2576273.

Test	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)	<0.0010	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	101	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	102	%	AsureQuality Method (LC-MS/MS)
M8PFOS	106	%	AsureQuality Method (LC-MS/MS)
M4PFBA	107	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	104	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	108	%	AsureQuality Method (LC-MS/MS)
MPFHpA	105	%	AsureQuality Method (LC-MS/MS)
M8PFOA	104	%	AsureQuality Method (LC-MS/MS)
M9PFNA	106	%	AsureQuality Method (LC-MS/MS)
M6PFDA	112	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	103	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	115	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	106	%	AsureQuality Method (LC-MS/MS)
MPFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	58	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	69	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	114	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	85	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	92	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	117	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	113	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	140	%	AsureQuality Method (LC-MS/MS)

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

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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 9Cl-PF3ONS (F-53B major) and 11Cl-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

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	NR µg/L
PFECHS	0.0010 µg/L
Perfluoroalkylcarboxylic acids	
PFBA	NR 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	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	NR 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

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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 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 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

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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

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AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744119
Final Report

Kate Walker
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 02-Nov-2021 **AsureQuality Reference: 21-304817** **Sample(s) Received:** 28-Oct-2021 13:35

Testing Period: 29-Oct-2021 to 02-Nov-2021
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW112.2_2_261021 **Lab ID:** 21-304817-1

Sample Condition: Acceptable **Sampled Date**: 26-Oct-2021

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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)

AsureQuality 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's standard terms of business apply to the analysis set out in this report.

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Test	Result	Unit	Method Reference
PFDoDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	NR	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	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	NR	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	0.0052	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)	<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)	NR	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.0010 (P)	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	108	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	110	%	AsureQuality Method (LC-MS/MS)
M8PFOS	99	%	AsureQuality Method (LC-MS/MS)
M4PFBA	104	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	105	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	106	%	AsureQuality Method (LC-MS/MS)
MPFHpA	107	%	AsureQuality Method (LC-MS/MS)
M8PFOA	105	%	AsureQuality Method (LC-MS/MS)
M9PFNA	95	%	AsureQuality Method (LC-MS/MS)
M6PFDA	91	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	54	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	27 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	52	%	AsureQuality Method (LC-MS/MS)
MPFOSA	56	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	14 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	22 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	21 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	30	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	20 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	28 (R)	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M4:2FTS	112	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	118	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	87	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	119	%	AsureQuality Method (LC-MS/MS)

P = Partial result - one or more individual components could not be reported

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 21-304817-1

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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	<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)

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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	101	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	102	%	AsureQuality Method (LC-MS/MS)
M8PFOS	106	%	AsureQuality Method (LC-MS/MS)
M4PFBA	107	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	104	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	108	%	AsureQuality Method (LC-MS/MS)
MPFHpA	105	%	AsureQuality Method (LC-MS/MS)
M8PFOA	104	%	AsureQuality Method (LC-MS/MS)
M9PFNA	106	%	AsureQuality Method (LC-MS/MS)
M6PFDA	112	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	103	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	115	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	106	%	AsureQuality Method (LC-MS/MS)
MPFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	58	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	69	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	114	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	85	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	92	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	117	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	113	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	140	%	AsureQuality Method (LC-MS/MS)

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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 9Cl-PF3ONS (F-53B major) and 11Cl-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

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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	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	NR µg/L
PFTrDA	NR µg/L
PFTeDA	0.0010 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	NR µg/L
NMeFOSAA	NR µg/L
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	NR µg/L
NMeFOSE-M	NR 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

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FHpPA (7:3FTA)	0.0010 µg/L
Miscellaneous	
F-53B (major)	0.0010 µg/L
F-53B (minor)	NR 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 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 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

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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

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AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744118
Final Report

Kate Walker
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 02-Nov-2021 **AsureQuality Reference: 21-304859** **Sample(s) Received:** 28-Oct-2021 13:35

Testing Period: 29-Oct-2021 to 02-Nov-2021
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_SHW_SW4_4_271021 **Lab ID:** 21-304859-1

Sample Condition: Acceptable **Sampled Date**: 27-Oct-2021

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.0085	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.0035	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.0016	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.0011	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)

AsureQuality 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's standard terms of business apply to the analysis set out in this report.

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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	<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	NR	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	NR	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	103	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	107	%	AsureQuality Method (LC-MS/MS)
M8PFOS	105	%	AsureQuality Method (LC-MS/MS)
M4PFBA	65	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	86	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	96	%	AsureQuality Method (LC-MS/MS)
MPFHpA	102	%	AsureQuality Method (LC-MS/MS)
M8PFOA	99	%	AsureQuality Method (LC-MS/MS)
M9PFNA	110	%	AsureQuality Method (LC-MS/MS)
M6PFDA	104	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	97	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	130	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	212 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	91	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	79	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	75	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	86	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	83	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M4:2FTS	260 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	209 (R)	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	112	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	117	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 21-304859-1

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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	<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)

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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	<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	101	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	102	%	AsureQuality Method (LC-MS/MS)
M8PFOS	106	%	AsureQuality Method (LC-MS/MS)
M4PFBA	107	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	104	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	108	%	AsureQuality Method (LC-MS/MS)
MPFHpA	105	%	AsureQuality Method (LC-MS/MS)
M8PFOA	104	%	AsureQuality Method (LC-MS/MS)
M9PFNA	106	%	AsureQuality Method (LC-MS/MS)
M6PFDA	112	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	103	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	115	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	106	%	AsureQuality Method (LC-MS/MS)
MPFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	58	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	69	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	114	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	85	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	92	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	117	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	113	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	140	%	AsureQuality Method (LC-MS/MS)

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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 9Cl-PF3ONS (F-53B major) and 11Cl-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

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	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	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	NR µg/L
6:2 FTS	NR 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

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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 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 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

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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

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AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744118
Final Report

Kate Walker
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 12-Nov-2021 **AsureQuality Reference: 21-304900** **Sample(s) Received:** 28-Oct-2021 13:35

Testing Period: 30-Oct-2021 to 12-Nov-2021
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_FTA_MW4_7_271021 **Lab ID:** 21-304900-1

Sample Condition: Acceptable **Sampled Date**: 27-Oct-2021

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)
PFBS	0.033	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.048	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.091	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.60	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.69	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.032	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.68	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	1.2	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	1.9	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	2.6	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	0.27	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	1.1	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.73	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.37	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.38	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.24	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 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's standard terms of business apply to the analysis set out in this report.

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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			
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	1.1	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	101	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	107	%	AsureQuality Method (LC-MS/MS)
M8PFOS	107	%	AsureQuality Method (LC-MS/MS)
M4PFBA	101	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	104	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	102	%	AsureQuality Method (LC-MS/MS)
MPFHpA	112	%	AsureQuality Method (LC-MS/MS)
M8PFOA	105	%	AsureQuality Method (LC-MS/MS)
M9PFNA	103	%	AsureQuality Method (LC-MS/MS)
M6PFDA	101	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	95	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	107	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	72	%	AsureQuality Method (LC-MS/MS)
MPFOSA	107	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	97	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	110	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	103	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M4:2FTS	90	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	87	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	87	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_RUP_MW6_8_271021 **Lab ID:** 21-304900-2

Sample Condition: Acceptable **Sampled Date**: 27-Oct-2021

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level			
Perfluoroalkylsulfonic acids			
PFPrS	0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.33	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.38	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.77	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	5.7	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	6.5	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.24	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.18	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	2.7	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	4.6	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	7.5	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	14	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	0.57	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	1.7	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	1.6	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.69	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.97	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.61	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)

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Test	Result	Unit	Method Reference
Telomere Sulfonic acids			
4:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<1.0	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	104	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	102	%	AsureQuality Method (LC-MS/MS)
M8PFOS	107	%	AsureQuality Method (LC-MS/MS)
M4PFBA	104	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	108	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	101	%	AsureQuality Method (LC-MS/MS)
MPFHpA	110	%	AsureQuality Method (LC-MS/MS)
M8PFOA	106	%	AsureQuality Method (LC-MS/MS)
M9PFNA	104	%	AsureQuality Method (LC-MS/MS)
M6PFDA	98	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	98	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	103	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	51	%	AsureQuality Method (LC-MS/MS)
MPFOSA	109	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	111	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	111	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	114	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	102	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	90	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	96	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	111	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_DTK_MW9_7_271021 **Lab ID:** 21-304900-3

Sample Condition: Acceptable **Sampled Date**: 27-Oct-2021

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)
PFBS	0.046	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.057	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
mono-PFHxS (1)	0.10	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.79	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.89	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.029	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.042	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.46	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.53	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	1.0	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	1.9	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	0.52	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	2.0	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	1.0	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.49	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.47	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.26	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	2.3	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)

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Test	Result	Unit	Method Reference
Internal Standards			
M3PFBS	104	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	104	%	AsureQuality Method (LC-MS/MS)
M8PFOS	99	%	AsureQuality Method (LC-MS/MS)
M4PFBA	102	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	104	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	102	%	AsureQuality Method (LC-MS/MS)
MPFHpA	103	%	AsureQuality Method (LC-MS/MS)
M8PFOA	104	%	AsureQuality Method (LC-MS/MS)
M9PFNA	103	%	AsureQuality Method (LC-MS/MS)
M6PFDA	99	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	100	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	106	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	63	%	AsureQuality Method (LC-MS/MS)
MPFOSA	107	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	112	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	102	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	87	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	84	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	84	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_FTA_WS1_6_271021 **Lab ID:** 21-304900-4

Sample Condition: Acceptable **Sampled Date**: 27-Oct-2021

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)
PFBS	0.026	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.026	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.037	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.14	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.18	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)	0.18	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	0.11	µg/L	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
PFHxA	0.093	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.036	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.029	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	<1.0	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	102	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	100	%	AsureQuality Method (LC-MS/MS)
M8PFOS	102	%	AsureQuality Method (LC-MS/MS)
M4PFBA	102	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	101	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	102	%	AsureQuality Method (LC-MS/MS)
MPFHpA	107	%	AsureQuality Method (LC-MS/MS)
M8PFOA	102	%	AsureQuality Method (LC-MS/MS)
M9PFNA	103	%	AsureQuality Method (LC-MS/MS)
M6PFDA	96	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	97	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	107	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	72	%	AsureQuality Method (LC-MS/MS)
MPFOSA	108	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
DNEtFOSA	99	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	107	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	116	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	111	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	104	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	89	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	101	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	79	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	103	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_ADJ_GWDPJ_1_271021 **Lab ID:** 21-304900-5

Sample Condition: Acceptable **Sampled Date**: 27-Oct-2021

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level			
Perfluoroalkylsulfonic acids			
PFPrS	0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.32	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.38	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.74	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	5.5	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	6.2	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.25	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.21	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	2.8	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	4.7	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	7.7	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	14	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	0.55	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	1.8	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	1.6	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.69	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.96	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.56	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)

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Test	Result	Unit	Method Reference
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	<1.0	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	101	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	104	%	AsureQuality Method (LC-MS/MS)
M8PFOS	106	%	AsureQuality Method (LC-MS/MS)
M4PFBA	103	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	101	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	97	%	AsureQuality Method (LC-MS/MS)
MPFHpA	111	%	AsureQuality Method (LC-MS/MS)
M8PFOA	108	%	AsureQuality Method (LC-MS/MS)
M9PFNA	110	%	AsureQuality Method (LC-MS/MS)
M6PFDA	98	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	97	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	113	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	84	%	AsureQuality Method (LC-MS/MS)
MPFOSA	109	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	118	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	116	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	115	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	107	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	91	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	97	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_ADJ_GWDPI_1_271021 **Lab ID:** 21-304900-6

Sample Condition: Acceptable **Sampled Date**: 27-Oct-2021

Test	Result	Unit	Method Reference

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

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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	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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)

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Test	Result	Unit	Method Reference
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	99	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	108	%	AsureQuality Method (LC-MS/MS)
M8PFOS	109	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	95	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)
MPFHpA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	101	%	AsureQuality Method (LC-MS/MS)
M9PFNA	111	%	AsureQuality Method (LC-MS/MS)
M6PFDA	114	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	90	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	66	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	59	%	AsureQuality Method (LC-MS/MS)
MPFOSA	87	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	53	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	65	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	93	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	106	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	68	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	79	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	90	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	92	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_ADJ_GWDPH_1_271021 **Lab ID:** 21-304900-7

Sample Condition: Acceptable **Sampled Date**: 27-Oct-2021

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)
PFBS	0.048	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.056	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.11	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.77	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.88	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.030	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.42	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.40	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.85	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	1.7	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)

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Test	Result	Unit	Method Reference
PFECHS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.52	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	2.0	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	1.1	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.51	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.44	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.24	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	2.3	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	101	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	104	%	AsureQuality Method (LC-MS/MS)
M8PFOS	106	%	AsureQuality Method (LC-MS/MS)
M4PFBA	101	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	108	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	103	%	AsureQuality Method (LC-MS/MS)
MPFHpA	107	%	AsureQuality Method (LC-MS/MS)
M8PFOA	113	%	AsureQuality Method (LC-MS/MS)
M9PFNA	112	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M7PFUnDA	99	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	105	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	74	%	AsureQuality Method (LC-MS/MS)
MPFOSA	106	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	99	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	92	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	113	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	117	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	106	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	92	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	96	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_ADJ_GWDPK_1_271021 **Lab ID:** 21-304900-8

Sample Condition: Acceptable **Sampled Date**: 27-Oct-2021

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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)

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Test	Result	Unit	Method Reference
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	89	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	89	%	AsureQuality Method (LC-MS/MS)
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)
M4PFBA	85	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	86	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	87	%	AsureQuality Method (LC-MS/MS)
MPFHpA	91	%	AsureQuality Method (LC-MS/MS)
M8PFOA	87	%	AsureQuality Method (LC-MS/MS)
M9PFNA	101	%	AsureQuality Method (LC-MS/MS)
M6PFDA	103	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	97	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	101	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	97	%	AsureQuality Method (LC-MS/MS)
MPFOSA	99	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	130	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	128	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	95	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	101	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	122	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	121	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	90	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	83	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	88	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	96	%	AsureQuality Method (LC-MS/MS)

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QC Results

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Relates to sample(s) 21-304900-1, 21-304900-2, 21-304900-3, 21-304900-4, 21-304900-5, 21-304900-7

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)
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)

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Test	Result	Unit	Method Reference
6:2 FTS	<1.0	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	105	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	98	%	AsureQuality Method (LC-MS/MS)
M8PFOS	106	%	AsureQuality Method (LC-MS/MS)
M4PFBA	105	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	106	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	104	%	AsureQuality Method (LC-MS/MS)
MPFHpA	104	%	AsureQuality Method (LC-MS/MS)
M8PFOA	98	%	AsureQuality Method (LC-MS/MS)
M9PFNA	101	%	AsureQuality Method (LC-MS/MS)
M6PFDA	95	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	93	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	108	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	94	%	AsureQuality Method (LC-MS/MS)
MPFOSA	106	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	99	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	113	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	101	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	103	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	91	%	AsureQuality Method (LC-MS/MS)

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Relates to sample(s) 21-304900-6, 21-304900-8

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)

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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	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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)

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Test	Result	Unit	Method Reference
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	102	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	107	%	AsureQuality Method (LC-MS/MS)
M8PFOS	106	%	AsureQuality Method (LC-MS/MS)
M4PFBA	106	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	104	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	104	%	AsureQuality Method (LC-MS/MS)
MPFHpA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	103	%	AsureQuality Method (LC-MS/MS)
M9PFNA	106	%	AsureQuality Method (LC-MS/MS)
M6PFDA	114	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	109	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	70	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	85	%	AsureQuality Method (LC-MS/MS)
MPFOSA	84	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	40	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	48	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	83	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	58	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	79	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	98	%	AsureQuality Method (LC-MS/MS)

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 9Cl-PF3ONS (F-53B major) and 11Cl-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

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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 9Cl-PF3ONS (F-53B major) and 11Cl-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

Appendix

Analyte LOR Summary

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

Analyte	LOR
Listing applies to samples: 21-304900-6, 21-304900-8	
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	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

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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: 21-304900-1, 21-304900-2, 21-304900-3, 21-304900-4, 21-304900-5, 21-304900-7	
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	

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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: 21-304900-6, 21-304900-8	
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
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	

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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
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

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

Analyte	Full Name
Listing applies to samples: 21-304900-1, 21-304900-2, 21-304900-3, 21-304900-4, 21-304900-5, 21-304900-7	
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

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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 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

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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

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AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744119
Final Report

Kate Walker
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 12-Nov-2021 **AsureQuality Reference: 21-306774** **Sample(s) Received:** 01-Nov-2021 10:00

Testing Period: 01-Nov-2021 to 12-Nov-2021
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_SW33_6_291021 **Lab ID:** 21-306774-1

Sample Condition: Acceptable **Sampled Date**: 29-Oct-2021

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.0035	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0072	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)	0.012	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.074	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.086	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0020	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0028	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.041	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.045	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.089	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.18	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)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.061	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.27	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.18	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.074	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.027	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0091	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 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's standard terms of business apply to the analysis set out in this report.

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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	NR	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.0051	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	96	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	101	%	AsureQuality Method (LC-MS/MS)
M8PFOS	115	%	AsureQuality Method (LC-MS/MS)
M4PFBA	55	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	75	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	88	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	96	%	AsureQuality Method (LC-MS/MS)
M9PFNA	101	%	AsureQuality Method (LC-MS/MS)
M6PFDA	92	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	117	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	80	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	98	%	AsureQuality Method (LC-MS/MS)
MPFOSA	65	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	47	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	47	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	86	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	41	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	48	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M4:2FTS	271 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	130	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	89	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	77	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: Duplicate of 21-306774-1A **Lab ID:** 21-306774-2

Sample Description: OHA_ADJ_SW33_6_291021 Duplicate

Sample Condition: Acceptable **Sampled Date**: 29-Oct-2021

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)
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)	0.080	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.080	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)	0.037	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.048	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.085	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.16	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	0.27	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.19	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.081	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.037	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)

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Test	Result	Unit	Method Reference
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	<1.0	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	100	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	102	%	AsureQuality Method (LC-MS/MS)
M8PFOS	107	%	AsureQuality Method (LC-MS/MS)
M4PFBA	102	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	110	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	106	%	AsureQuality Method (LC-MS/MS)
MPFHpA	110	%	AsureQuality Method (LC-MS/MS)
M8PFOA	103	%	AsureQuality Method (LC-MS/MS)
M9PFNA	110	%	AsureQuality Method (LC-MS/MS)
M6PFDA	101	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	118	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	108	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	82	%	AsureQuality Method (LC-MS/MS)
MPFOSA	107	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	106	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	108	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	122	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	112	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	93	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	92	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	103	%	AsureQuality Method (LC-MS/MS)

QC Results

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Relates to sample(s) 21-306774-1, 21-306774-2

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)

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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)
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	<1.0	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)

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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	105	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	98	%	AsureQuality Method (LC-MS/MS)
M8PFOS	106	%	AsureQuality Method (LC-MS/MS)
M4PFBA	105	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	106	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	104	%	AsureQuality Method (LC-MS/MS)
MPFHpA	104	%	AsureQuality Method (LC-MS/MS)
M8PFOA	98	%	AsureQuality Method (LC-MS/MS)
M9PFNA	101	%	AsureQuality Method (LC-MS/MS)
M6PFDA	95	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	93	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	108	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	94	%	AsureQuality Method (LC-MS/MS)
MPFOSA	106	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	99	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	113	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	101	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	103	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	91	%	AsureQuality Method (LC-MS/MS)

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Relates to sample(s) 21-306774-1

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)

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Test	Result	Unit	Method Reference
Sum PFHxS+PFOS (1)	<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)
PFECHS	<0.0010	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	102	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	107	%	AsureQuality Method (LC-MS/MS)
M8PFOS	106	%	AsureQuality Method (LC-MS/MS)
M4PFBA	106	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M5PFPeA	104	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	104	%	AsureQuality Method (LC-MS/MS)
MPFHpA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	103	%	AsureQuality Method (LC-MS/MS)
M9PFNA	106	%	AsureQuality Method (LC-MS/MS)
M6PFDA	114	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	109	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	70	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	85	%	AsureQuality Method (LC-MS/MS)
MPFOSA	84	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	40	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	48	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	83	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	58	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	79	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	98	%	AsureQuality Method (LC-MS/MS)

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 9Cl-PF3ONS (F-53B major) and 11Cl-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

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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 9Cl-PF3ONS (F-53B major) and 11Cl-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

Appendix

Analyte LOR Summary

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

Analyte	LOR
Listing applies to samples: 21-306774-1	
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	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	NR 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

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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: 21-306774-2	
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
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	

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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: 21-306774-1	
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
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	

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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
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

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

Analyte	Full Name
Listing applies to samples: 21-306774-2	
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

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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 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

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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

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AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744119
Final Report

Kate Walker
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 13-Dec-2021 **AsureQuality Reference: 21-306785** **Sample(s) Received:** 01-Nov-2021 10:00

Testing Period: 01-Nov-2021 to 10-Dec-2021
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_SWDPG_1_291021 **Lab ID:** 21-306785-1

Sample Condition: Acceptable **Sampled Date**: 29-Oct-2021

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	NR	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)

AsureQuality 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's standard terms of business apply to the analysis set out in this report.

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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	100	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	91	%	AsureQuality Method (LC-MS/MS)
M8PFOS	104	%	AsureQuality Method (LC-MS/MS)
M4PFBA	98	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	99	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	95	%	AsureQuality Method (LC-MS/MS)
MPFHpA	93	%	AsureQuality Method (LC-MS/MS)
M8PFOA	93	%	AsureQuality Method (LC-MS/MS)
M9PFNA	101	%	AsureQuality Method (LC-MS/MS)
M6PFDA	117	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	104	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	66	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	60	%	AsureQuality Method (LC-MS/MS)
MPFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	53	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	56	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	84	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	48	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	55	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M4:2FTS	91	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	106	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 21-306785-1

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	NR	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)

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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	95	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	95	%	AsureQuality Method (LC-MS/MS)
M8PFOS	104	%	AsureQuality Method (LC-MS/MS)
M4PFBA	96	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	93	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	94	%	AsureQuality Method (LC-MS/MS)
MPFHpA	91	%	AsureQuality Method (LC-MS/MS)
M8PFOA	98	%	AsureQuality Method (LC-MS/MS)
M9PFNA	101	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	90	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	106	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	116	%	AsureQuality Method (LC-MS/MS)
MPFOSA	101	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	126	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	113	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	91	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	93	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	128	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	117	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	93	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	90	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	98	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	113	%	AsureQuality Method (LC-MS/MS)

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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 9Cl-PF3ONS (F-53B major) and 11Cl-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

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	NR 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

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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 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 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

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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

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AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744118
Final Report

Kate Walker
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 12-Nov-2021 **AsureQuality Reference: 21-306798** **Sample(s) Received:** 01-Nov-2021 10:00

Testing Period: 01-Nov-2021 to 12-Nov-2021
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW6_7_281021 **Lab ID:** 21-306798-1

Sample Condition: Acceptable **Sampled Date**: 28-Oct-2021

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.0025	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0028	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.0033	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.0026	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.013	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.016	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)	0.0051	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.0090	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.014	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.030	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)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.0053	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.0068	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.0078	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.0033	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.0019	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)

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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	<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	NR	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.0013	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	85	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	101	%	AsureQuality Method (LC-MS/MS)
M8PFOS	121	%	AsureQuality Method (LC-MS/MS)
M4PFBA	36	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	57	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	55	%	AsureQuality Method (LC-MS/MS)
MPFHpA	79	%	AsureQuality Method (LC-MS/MS)
M8PFOA	74	%	AsureQuality Method (LC-MS/MS)
M9PFNA	91	%	AsureQuality Method (LC-MS/MS)
M6PFDA	102	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	111	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	91	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	291 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	65	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	78	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	87	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	89	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	87	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	63	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	68	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M4:2FTS	330 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	160 (R)	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	49	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 21-306798-1

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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)

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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	<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	102	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	107	%	AsureQuality Method (LC-MS/MS)
M8PFOS	106	%	AsureQuality Method (LC-MS/MS)
M4PFBA	106	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	104	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	104	%	AsureQuality Method (LC-MS/MS)
MPFHpA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	103	%	AsureQuality Method (LC-MS/MS)
M9PFNA	106	%	AsureQuality Method (LC-MS/MS)
M6PFDA	114	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	109	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	70	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	85	%	AsureQuality Method (LC-MS/MS)
MPFOSA	84	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	40	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	48	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	83	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	58	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	79	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	98	%	AsureQuality Method (LC-MS/MS)

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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 9Cl-PF3ONS (F-53B major) and 11Cl-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

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	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	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	NR 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

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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 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 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

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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

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AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744119
Final Report

Kate Walker
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 12-Nov-2021 **AsureQuality Reference: 21-306804** **Sample(s) Received:** 01-Nov-2021 10:00

Testing Period: 01-Nov-2021 to 12-Nov-2021
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW106_2_291021 **Lab ID:** 21-306804-1

Sample Condition: Acceptable **Sampled Date**: 29-Oct-2021

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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)

AsureQuality 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's standard terms of business apply to the analysis set out in this report.

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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	88	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	101	%	AsureQuality Method (LC-MS/MS)
M8PFOS	102	%	AsureQuality Method (LC-MS/MS)
M4PFBA	55	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	81	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	91	%	AsureQuality Method (LC-MS/MS)
MPFHpA	102	%	AsureQuality Method (LC-MS/MS)
M8PFOA	90	%	AsureQuality Method (LC-MS/MS)
M9PFNA	94	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	113	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	87	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	73	%	AsureQuality Method (LC-MS/MS)
MPFOSA	90	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	75	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	83	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	84	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	88	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	97	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M4:2FTS	157 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	105	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	91	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	85	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 21-306804-1

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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)

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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	<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	102	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	107	%	AsureQuality Method (LC-MS/MS)
M8PFOS	106	%	AsureQuality Method (LC-MS/MS)
M4PFBA	106	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	104	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	104	%	AsureQuality Method (LC-MS/MS)
MPFHpA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	103	%	AsureQuality Method (LC-MS/MS)
M9PFNA	106	%	AsureQuality Method (LC-MS/MS)
M6PFDA	114	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	109	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	70	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	85	%	AsureQuality Method (LC-MS/MS)
MPFOSA	84	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	40	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	48	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	83	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	58	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	79	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	98	%	AsureQuality Method (LC-MS/MS)

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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 9Cl-PF3ONS (F-53B major) and 11Cl-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

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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	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	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

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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 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 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

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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

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AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744119
Final Report

Kate Walker
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 12-Nov-2021 **AsureQuality Reference: 21-306843** **Sample(s) Received:** 01-Nov-2021 10:00

Testing Period: 01-Nov-2021 to 12-Nov-2021
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW108_3_291021 **Lab ID:** 21-306843-1

Sample Condition: Acceptable **Sampled Date**: 29-Oct-2021

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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)

AsureQuality 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's standard terms of business apply to the analysis set out in this report.

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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	87	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	92	%	AsureQuality Method (LC-MS/MS)
M8PFOS	107	%	AsureQuality Method (LC-MS/MS)
M4PFBA	51	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	69	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	81	%	AsureQuality Method (LC-MS/MS)
MPFHpA	94	%	AsureQuality Method (LC-MS/MS)
M8PFOA	81	%	AsureQuality Method (LC-MS/MS)
M9PFNA	99	%	AsureQuality Method (LC-MS/MS)
M6PFDA	105	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	116	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	92	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	47	%	AsureQuality Method (LC-MS/MS)
MPFOSA	92	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	67	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	79	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	95	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	106	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	76	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	88	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M4:2FTS	180 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	98	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	98	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	90	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 21-306843-1

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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)

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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	<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	102	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	107	%	AsureQuality Method (LC-MS/MS)
M8PFOS	106	%	AsureQuality Method (LC-MS/MS)
M4PFBA	106	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	104	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	104	%	AsureQuality Method (LC-MS/MS)
MPFHpA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	103	%	AsureQuality Method (LC-MS/MS)
M9PFNA	106	%	AsureQuality Method (LC-MS/MS)
M6PFDA	114	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	109	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	70	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	85	%	AsureQuality Method (LC-MS/MS)
MPFOSA	84	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	40	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	48	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	83	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	58	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	79	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	98	%	AsureQuality Method (LC-MS/MS)

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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 9Cl-PF3ONS (F-53B major) and 11Cl-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

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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	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	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

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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 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 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

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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

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AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744119
Final Report

Kate Walker
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 12-Nov-2021 **AsureQuality Reference: 21-306853** **Sample(s) Received:** 01-Nov-2021 10:00

Testing Period: 01-Nov-2021 to 12-Nov-2021
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_SW36_7_291021 **Lab ID:** 21-306853-1

Sample Condition: Acceptable **Sampled Date**: 29-Oct-2021

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.0014	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0026	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.0028	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.0039	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.023	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.027	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)	0.011	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.0095	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.020	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.047	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)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.017	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.060	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.039	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.018	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.0079	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0026	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 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's standard terms of business apply to the analysis set out in this report.

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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	NR	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	103	%	AsureQuality Method (LC-MS/MS)
M8PFOS	96	%	AsureQuality Method (LC-MS/MS)
M4PFBA	53	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	69	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	83	%	AsureQuality Method (LC-MS/MS)
MPFHpA	95	%	AsureQuality Method (LC-MS/MS)
M8PFOA	89	%	AsureQuality Method (LC-MS/MS)
M9PFNA	92	%	AsureQuality Method (LC-MS/MS)
M6PFDA	80	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	103	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	112	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	188 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	88	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	88	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	92	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	95	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	90	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	88	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	91	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M4:2FTS	262 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	117	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	77	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	70	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: OHA_ADJ_BPTAP_1_291021 **Lab ID:** 21-306853-2

Sample Condition: Acceptable **Sampled Date**: 29-Oct-2021

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)	0.0054	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.0054	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)	0.0033	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.0023	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.0056	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.011	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)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.0017	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)

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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)
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	93	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	100	%	AsureQuality Method (LC-MS/MS)
M8PFOS	102	%	AsureQuality Method (LC-MS/MS)
M4PFBA	79	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	89	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	97	%	AsureQuality Method (LC-MS/MS)
MPFHpA	102	%	AsureQuality Method (LC-MS/MS)
M8PFOA	91	%	AsureQuality Method (LC-MS/MS)
M9PFNA	103	%	AsureQuality Method (LC-MS/MS)
M6PFDA	102	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	112	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	92	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	65	%	AsureQuality Method (LC-MS/MS)
MPFOSA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	110	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	108	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	92	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	99	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	102	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	85	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	107	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	93	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	90	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	99	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 21-306853-1, 21-306853-2

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)

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Test	Result	Unit	Method Reference
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	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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)

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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	102	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	107	%	AsureQuality Method (LC-MS/MS)
M8PFOS	106	%	AsureQuality Method (LC-MS/MS)
M4PFBA	106	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	104	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	104	%	AsureQuality Method (LC-MS/MS)
MPFHpA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	103	%	AsureQuality Method (LC-MS/MS)
M9PFNA	106	%	AsureQuality Method (LC-MS/MS)
M6PFDA	114	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	109	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	70	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	85	%	AsureQuality Method (LC-MS/MS)
MPFOSA	84	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	40	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	48	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	83	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	58	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	79	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	98	%	AsureQuality Method (LC-MS/MS)

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 9Cl-PF3ONS (F-53B major) and 11Cl-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

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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

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	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	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	NR 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

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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 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 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

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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

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AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744119
Final Report

Kate Walker
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 12-Nov-2021 **AsureQuality Reference: 21-306870** **Sample(s) Received:** 01-Nov-2021 10:00

Testing Period: 01-Nov-2021 to 12-Nov-2021
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW107_3_291021 **Lab ID:** 21-306870-1

Sample Condition: Acceptable **Sampled Date**: 29-Oct-2021

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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)

AsureQuality 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's standard terms of business apply to the analysis set out in this report.

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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	<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	104	%	AsureQuality Method (LC-MS/MS)
M8PFOS	110	%	AsureQuality Method (LC-MS/MS)
M4PFBA	75	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	82	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	91	%	AsureQuality Method (LC-MS/MS)
MPFHpA	102	%	AsureQuality Method (LC-MS/MS)
M8PFOA	88	%	AsureQuality Method (LC-MS/MS)
M9PFNA	94	%	AsureQuality Method (LC-MS/MS)
M6PFDA	112	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	127	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	136	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	348 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	131	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	124	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	124	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	118	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M4:2FTS	185 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	92	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	78	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: OHA_ADJ_GWDPM_1_291021 **Lab ID:** 21-306870-2

Sample Condition: Acceptable **Sampled Date**: 29-Oct-2021

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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)

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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)
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	91	%	AsureQuality Method (LC-MS/MS)
M8PFOS	92	%	AsureQuality Method (LC-MS/MS)
M4PFBA	86	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	89	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	92	%	AsureQuality Method (LC-MS/MS)
MPFHpA	101	%	AsureQuality Method (LC-MS/MS)
M8PFOA	94	%	AsureQuality Method (LC-MS/MS)
M9PFNA	93	%	AsureQuality Method (LC-MS/MS)
M6PFDA	85	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	90	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	69	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	43	%	AsureQuality Method (LC-MS/MS)
MPFOSA	68	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	63	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	65	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	77	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	84	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	77	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	70	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	89	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	91	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	84	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	81	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_ADJ_GWDPN_1_291021 **Lab ID:** 21-306870-3

Sample Condition: Acceptable **Sampled Date**: 29-Oct-2021

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)

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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	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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)

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Test	Result	Unit	Method Reference
Internal Standards			
M3PFBS	92	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	93	%	AsureQuality Method (LC-MS/MS)
M8PFOS	87	%	AsureQuality Method (LC-MS/MS)
M4PFBA	87	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	93	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	91	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	86	%	AsureQuality Method (LC-MS/MS)
M9PFNA	95	%	AsureQuality Method (LC-MS/MS)
M6PFDA	93	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	79	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	50	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	53	%	AsureQuality Method (LC-MS/MS)
MPFOSA	88	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	72	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	88	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	67	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	78	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	79	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	77	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	90	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	84	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	75	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	91	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_ADJ_GWDPO_1_291021 **Lab ID:** 21-306870-4

Sample Condition: Acceptable **Sampled Date**: 29-Oct-2021

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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)

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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	94	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	102	%	AsureQuality Method (LC-MS/MS)
M8PFOS	110	%	AsureQuality Method (LC-MS/MS)
M4PFBA	78	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	89	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	96	%	AsureQuality Method (LC-MS/MS)
MPFHpA	102	%	AsureQuality Method (LC-MS/MS)
M8PFOA	91	%	AsureQuality Method (LC-MS/MS)
M9PFNA	103	%	AsureQuality Method (LC-MS/MS)
M6PFDA	106	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	145	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	79	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	132	%	AsureQuality Method (LC-MS/MS)
MPFOSA	78	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
DNEtFOSA	38	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	51	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	87	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	46	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	54	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	183 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	96	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	75	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: Duplicate of 21-306870-4A **Lab ID:** 21-306870-5

Sample Description: OHA_ADJ_GWDPO_1_291021 Duplicate

Sample Condition: Acceptable **Sampled Date**: 29-Oct-2021

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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)

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Test	Result	Unit	Method Reference
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	86	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	97	%	AsureQuality Method (LC-MS/MS)
M8PFOS	101	%	AsureQuality Method (LC-MS/MS)
M4PFBA	68	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	81	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	85	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	86	%	AsureQuality Method (LC-MS/MS)
M9PFNA	90	%	AsureQuality Method (LC-MS/MS)
M6PFDA	105	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	130	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	114	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	99	%	AsureQuality Method (LC-MS/MS)
MPFOSA	93	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	113	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	119	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	95	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	97	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	102	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	153 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	86	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	87	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

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QC Results

Blank

Relates to sample(s) 21-306870-1, 21-306870-2, 21-306870-3, 21-306870-4, 21-306870-5

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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)

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Test	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)	<0.0010	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	102	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	107	%	AsureQuality Method (LC-MS/MS)
M8PFOS	106	%	AsureQuality Method (LC-MS/MS)
M4PFBA	106	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	104	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	104	%	AsureQuality Method (LC-MS/MS)
MPFHpA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	103	%	AsureQuality Method (LC-MS/MS)
M9PFNA	106	%	AsureQuality Method (LC-MS/MS)
M6PFDA	114	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	109	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	70	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	85	%	AsureQuality Method (LC-MS/MS)
MPFOSA	84	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	40	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	48	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	83	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	58	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	79	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	98	%	AsureQuality Method (LC-MS/MS)

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

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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 9Cl-PF3ONS (F-53B major) and 11Cl-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

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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	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	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

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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 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 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

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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

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AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744119
Final Report

Kate Walker
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 15-Nov-2021 **AsureQuality Reference: 21-306883** **Sample(s) Received:** 01-Nov-2021 10:00

Testing Period: 01-Nov-2021 to 15-Nov-2021
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW109_3_291021 **Lab ID:** 21-306883-1

Sample Condition: Acceptable **Sampled Date**: 29-Oct-2021

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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)

AsureQuality 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's standard terms of business apply to the analysis set out in this report.

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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	<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	110	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	104	%	AsureQuality Method (LC-MS/MS)
M8PFOS	117	%	AsureQuality Method (LC-MS/MS)
M4PFBA	84	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	96	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	98	%	AsureQuality Method (LC-MS/MS)
MPFHpA	109	%	AsureQuality Method (LC-MS/MS)
M8PFOA	107	%	AsureQuality Method (LC-MS/MS)
M9PFNA	96	%	AsureQuality Method (LC-MS/MS)
M6PFDA	95	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	100	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	109	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	69	%	AsureQuality Method (LC-MS/MS)
MPFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	95	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	101	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	89	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M4:2FTS	126	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	113	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	112	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	110	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 21-306883-1

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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	<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)

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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	98	%	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	105	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	98	%	AsureQuality Method (LC-MS/MS)
MPFHpA	95	%	AsureQuality Method (LC-MS/MS)
M8PFOA	106	%	AsureQuality Method (LC-MS/MS)
M9PFNA	105	%	AsureQuality Method (LC-MS/MS)
M6PFDA	106	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	114	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	133	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	54	%	AsureQuality Method (LC-MS/MS)
MPFOSA	119	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	111	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	123	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	129	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	124	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	132	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	117	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	90	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	107	%	AsureQuality Method (LC-MS/MS)

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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 9Cl-PF3ONS (F-53B major) and 11Cl-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

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	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	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

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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 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 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

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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

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AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744119
Final Report

Kate Walker
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 15-Nov-2021 **AsureQuality Reference: 21-306888** **Sample(s) Received:** 01-Nov-2021 10:00

Testing Period: 01-Nov-2021 to 15-Nov-2021
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW65_6_291021 **Lab ID:** 21-306888-1

Sample Condition: Acceptable **Sampled Date**: 29-Oct-2021

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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)

AsureQuality 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's standard terms of business apply to the analysis set out in this report.

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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	<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	102	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	101	%	AsureQuality Method (LC-MS/MS)
M8PFOS	98	%	AsureQuality Method (LC-MS/MS)
M4PFBA	92	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	105	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	98	%	AsureQuality Method (LC-MS/MS)
MPFHpA	105	%	AsureQuality Method (LC-MS/MS)
M8PFOA	103	%	AsureQuality Method (LC-MS/MS)
M9PFNA	94	%	AsureQuality Method (LC-MS/MS)
M6PFDA	81	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	75	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	90	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	72	%	AsureQuality Method (LC-MS/MS)
MPFOSA	92	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	67	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	76	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	72	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	81	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	89	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	80	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M4:2FTS	117	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	109	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	101	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	122	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 21-306888-1

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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	<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)

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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	98	%	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	105	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	98	%	AsureQuality Method (LC-MS/MS)
MPFHpA	95	%	AsureQuality Method (LC-MS/MS)
M8PFOA	106	%	AsureQuality Method (LC-MS/MS)
M9PFNA	105	%	AsureQuality Method (LC-MS/MS)
M6PFDA	106	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	114	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	133	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	54	%	AsureQuality Method (LC-MS/MS)
MPFOSA	119	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	111	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	123	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	129	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	124	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	132	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	117	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	90	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	107	%	AsureQuality Method (LC-MS/MS)

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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 9Cl-PF3ONS (F-53B major) and 11Cl-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

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	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	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

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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 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 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

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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

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AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744119
Final Report

Kate Walker
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 15-Nov-2021 **AsureQuality Reference: 21-306890** **Sample(s) Received:** 01-Nov-2021 10:00

Testing Period: 01-Nov-2021 to 15-Nov-2021
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW31_6_291021 **Lab ID:** 21-306890-1

Sample Condition: Acceptable **Sampled Date**: 29-Oct-2021

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.0054	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0090	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.0083	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)	0.059	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.072	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0013	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0026	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)	0.039	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.11	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)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.042	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.13	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.083	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.031	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.016	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 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's standard terms of business apply to the analysis set out in this report.

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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	<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	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	NR	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	0.0036	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	119	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	112	%	AsureQuality Method (LC-MS/MS)
M8PFOS	99	%	AsureQuality Method (LC-MS/MS)
M4PFBA	76	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	102	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	115	%	AsureQuality Method (LC-MS/MS)
MPFHpA	119	%	AsureQuality Method (LC-MS/MS)
M8PFOA	111	%	AsureQuality Method (LC-MS/MS)
M9PFNA	102	%	AsureQuality Method (LC-MS/MS)
M6PFDA	86	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	54	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	34	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	63	%	AsureQuality Method (LC-MS/MS)
MPFOSA	61	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	28 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	36	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	36	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	51	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	28 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	33	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M4:2FTS	165 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	132	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	98	%	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) 21-306890-1

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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	<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)

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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	<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	98	%	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	105	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	98	%	AsureQuality Method (LC-MS/MS)
MPFHpA	95	%	AsureQuality Method (LC-MS/MS)
M8PFOA	106	%	AsureQuality Method (LC-MS/MS)
M9PFNA	105	%	AsureQuality Method (LC-MS/MS)
M6PFDA	106	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	114	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	133	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	54	%	AsureQuality Method (LC-MS/MS)
MPFOSA	119	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	111	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	123	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	129	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	124	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	132	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	117	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	90	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	107	%	AsureQuality Method (LC-MS/MS)

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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 9Cl-PF3ONS (F-53B major) and 11Cl-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

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	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	0.0010 µg/L
P37DMOA	0.0010 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	NR 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

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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 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 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

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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

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AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744119
Final Report

Kate Walker
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 12-Nov-2021 **AsureQuality Reference: 21-306894** **Sample(s) Received:** 01-Nov-2021 10:00

Testing Period: 01-Nov-2021 to 12-Nov-2021
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_DPB_SW6_6_291021 **Lab ID:** 21-306894-1

Sample Condition: Acceptable **Sampled Date**: 29-Oct-2021

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)
PFBS	0.053	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.057	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.11	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.86	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.97	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.046	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.039	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.58	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.83	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	1.4	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	2.4	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	0.16	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.62	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.39	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.23	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.34	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.18	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 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's standard terms of business apply to the analysis set out in this report.

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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			
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	0.62	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	99	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	109	%	AsureQuality Method (LC-MS/MS)
M8PFOS	104	%	AsureQuality Method (LC-MS/MS)
M4PFBA	102	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	107	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	111	%	AsureQuality Method (LC-MS/MS)
MPFHpA	98	%	AsureQuality Method (LC-MS/MS)
M8PFOA	106	%	AsureQuality Method (LC-MS/MS)
M9PFNA	105	%	AsureQuality Method (LC-MS/MS)
M6PFDA	112	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	111	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	104	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	80	%	AsureQuality Method (LC-MS/MS)
MPFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	101	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	99	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	101	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	108	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	98	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M4:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	107	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	99	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 21-306894-1

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)
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)

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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	<0.10	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	104	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	107	%	AsureQuality Method (LC-MS/MS)
M8PFOS	98	%	AsureQuality Method (LC-MS/MS)
M4PFBA	101	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	116	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	108	%	AsureQuality Method (LC-MS/MS)
MPFHpA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	110	%	AsureQuality Method (LC-MS/MS)
M9PFNA	98	%	AsureQuality Method (LC-MS/MS)
M6PFDA	110	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	116	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	109	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	94	%	AsureQuality Method (LC-MS/MS)
MPFOSA	99	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	106	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	106	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	105	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	107	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	110	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	110	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	105	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	107	%	AsureQuality Method (LC-MS/MS)

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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 9Cl-PF3ONS (F-53B major) and 11Cl-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

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Appendix

Analyte LOR Summary

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

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

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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
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
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

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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

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AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744119
Final Report

Kate Walker
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 15-Nov-2021 **AsureQuality Reference: 21-306897** **Sample(s) Received:** 01-Nov-2021 10:00

Testing Period: 01-Nov-2021 to 15-Nov-2021
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW53_6_291021 **Lab ID:** 21-306897-1

Sample Condition: Acceptable **Sampled Date**: 29-Oct-2021

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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)

AsureQuality 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's standard terms of business apply to the analysis set out in this report.

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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	<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	105	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	108	%	AsureQuality Method (LC-MS/MS)
M8PFOS	108	%	AsureQuality Method (LC-MS/MS)
M4PFBA	97	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	98	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	97	%	AsureQuality Method (LC-MS/MS)
MPFHpA	105	%	AsureQuality Method (LC-MS/MS)
M8PFOA	101	%	AsureQuality Method (LC-MS/MS)
M9PFNA	98	%	AsureQuality Method (LC-MS/MS)
M6PFDA	92	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	96	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	76	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	64	%	AsureQuality Method (LC-MS/MS)
MPFOSA	91	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	60	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	76	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	74	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	80	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	70	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	64	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M4:2FTS	113	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	114	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	106	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 21-306897-1

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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	<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)

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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	98	%	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	105	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	98	%	AsureQuality Method (LC-MS/MS)
MPFHpA	95	%	AsureQuality Method (LC-MS/MS)
M8PFOA	106	%	AsureQuality Method (LC-MS/MS)
M9PFNA	105	%	AsureQuality Method (LC-MS/MS)
M6PFDA	106	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	114	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	133	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	54	%	AsureQuality Method (LC-MS/MS)
MPFOSA	119	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	111	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	123	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	129	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	124	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	132	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	117	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	90	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	107	%	AsureQuality Method (LC-MS/MS)

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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 9Cl-PF3ONS (F-53B major) and 11Cl-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

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	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	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

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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 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 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

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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

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AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744118
Final Report

Kate Walker
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 15-Nov-2021 **AsureQuality Reference: 21-308159** **Sample(s) Received:** 01-Nov-2021 10:00

Testing Period: 02-Nov-2021 to 15-Nov-2021
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_QRY_WS2_9_281021 **Lab ID:** 21-308159-1

Sample Condition: Acceptable **Sampled Date**: 28-Oct-2021

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)	0.0044	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.0044	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)	0.0011	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.0011	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.0055	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)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.0039	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.0048	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.0034	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.0017	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.0016	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 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's standard terms of business apply to the analysis set out in this report.

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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	<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	117	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	107	%	AsureQuality Method (LC-MS/MS)
M8PFOS	103	%	AsureQuality Method (LC-MS/MS)
M4PFBA	93	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	105	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	105	%	AsureQuality Method (LC-MS/MS)
MPFHpA	110	%	AsureQuality Method (LC-MS/MS)
M8PFOA	108	%	AsureQuality Method (LC-MS/MS)
M9PFNA	96	%	AsureQuality Method (LC-MS/MS)
M6PFDA	88	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	77	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	79	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	61	%	AsureQuality Method (LC-MS/MS)
MPFOSA	88	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	94	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	101	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	73	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	84	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	98	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	81	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M4:2FTS	119	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	116	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	112	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	109	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 21-308159-1

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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	<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)

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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	98	%	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	105	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	98	%	AsureQuality Method (LC-MS/MS)
MPFHpA	95	%	AsureQuality Method (LC-MS/MS)
M8PFOA	106	%	AsureQuality Method (LC-MS/MS)
M9PFNA	105	%	AsureQuality Method (LC-MS/MS)
M6PFDA	106	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	114	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	133	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	54	%	AsureQuality Method (LC-MS/MS)
MPFOSA	119	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	111	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	123	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	129	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	124	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	132	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	117	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	90	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	107	%	AsureQuality Method (LC-MS/MS)

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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 9Cl-PF3ONS (F-53B major) and 11Cl-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

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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	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	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

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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 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 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

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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

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AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744118
Final Report

Kate Walker
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 13-Dec-2021 **AsureQuality Reference: 21-308232** **Sample(s) Received:** 01-Nov-2021 10:00

Testing Period: 30-Nov-2021 to 10-Dec-2021
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GWDPL_1_281021 **Lab ID:** 21-308232-1

Sample Condition: Acceptable **Sampled Date**: 28-Oct-2021

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	NR	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)

AsureQuality 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's standard terms of business apply to the analysis set out in this report.

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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	95	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	89	%	AsureQuality Method (LC-MS/MS)
M8PFOS	96	%	AsureQuality Method (LC-MS/MS)
M4PFBA	94	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	101	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	93	%	AsureQuality Method (LC-MS/MS)
MPFHpA	94	%	AsureQuality Method (LC-MS/MS)
M8PFOA	88	%	AsureQuality Method (LC-MS/MS)
M9PFNA	98	%	AsureQuality Method (LC-MS/MS)
M6PFDA	112	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	105	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	81	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	108	%	AsureQuality Method (LC-MS/MS)
MPFOSA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	83	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	96	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	89	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	98	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M4:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	92	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	92	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	97	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 21-308232-1

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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	NR	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)

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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	95	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	95	%	AsureQuality Method (LC-MS/MS)
M8PFOS	104	%	AsureQuality Method (LC-MS/MS)
M4PFBA	96	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	93	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	94	%	AsureQuality Method (LC-MS/MS)
MPFHpA	91	%	AsureQuality Method (LC-MS/MS)
M8PFOA	98	%	AsureQuality Method (LC-MS/MS)
M9PFNA	101	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	90	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	106	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	116	%	AsureQuality Method (LC-MS/MS)
MPFOSA	101	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	126	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	113	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	91	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	93	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	128	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	117	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	93	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	90	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	98	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	113	%	AsureQuality Method (LC-MS/MS)

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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 9Cl-PF3ONS (F-53B major) and 11Cl-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

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	NR 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

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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 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 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

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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

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AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744118
Final Report

Kate Walker
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 15-Nov-2021 **AsureQuality Reference: 21-308236** **Sample(s) Received:** 01-Nov-2021 10:00

Testing Period: 03-Nov-2021 to 15-Nov-2021
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_BAI_GW111.1_2_281021 **Lab ID:** 21-308236-1

Sample Condition: Acceptable **Sampled Date**: 28-Oct-2021

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)
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)	0.032	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.20	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.23	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)	0.15	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.21	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.36	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.59	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	0.15	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.86	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.47	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.17	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.13	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.048	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 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's standard terms of business apply to the analysis set out in this report.

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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			
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	0.15	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	99	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	110	%	AsureQuality Method (LC-MS/MS)
M8PFOS	102	%	AsureQuality Method (LC-MS/MS)
M4PFBA	101	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	106	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	106	%	AsureQuality Method (LC-MS/MS)
MPFHpA	105	%	AsureQuality Method (LC-MS/MS)
M8PFOA	114	%	AsureQuality Method (LC-MS/MS)
M9PFNA	105	%	AsureQuality Method (LC-MS/MS)
M6PFDA	101	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	113	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	102	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	85	%	AsureQuality Method (LC-MS/MS)
MPFOSA	97	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	97	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	105	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	99	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	104	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M4:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	109	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	93	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	115	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_BAI_GW111.2_3_281021 **Lab ID:** 21-308236-2

Sample Condition: Acceptable **Sampled Date**: 28-Oct-2021

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)	0.0012	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.0012	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.0012	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)
PFECHS	<0.0010	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	<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)

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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	0.0024	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	114	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	109	%	AsureQuality Method (LC-MS/MS)
M8PFOS	117	%	AsureQuality Method (LC-MS/MS)
M4PFBA	93	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	105	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	99	%	AsureQuality Method (LC-MS/MS)
MPFHpA	109	%	AsureQuality Method (LC-MS/MS)
M8PFOA	101	%	AsureQuality Method (LC-MS/MS)
M9PFNA	96	%	AsureQuality Method (LC-MS/MS)
M6PFDA	94	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	109	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	101	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	201 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	66	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	81	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	95	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	97	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	90	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	88	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	137	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	132	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	113	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	96	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: OHA_BAI_GW111.3_2_281021 **Lab ID:** 21-308236-3

Sample Condition: Acceptable **Sampled Date**: 28-Oct-2021

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)

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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)	0.0021	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.0021	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.0021	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)
PFECHS	<0.0010	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	<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	0.0037	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)

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Test	Result	Unit	Method Reference
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	110	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	103	%	AsureQuality Method (LC-MS/MS)
M8PFOS	98	%	AsureQuality Method (LC-MS/MS)
M4PFBA	98	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	106	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	104	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	107	%	AsureQuality Method (LC-MS/MS)
M9PFNA	87	%	AsureQuality Method (LC-MS/MS)
M6PFDA	80	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	97	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	106	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	121	%	AsureQuality Method (LC-MS/MS)
MPFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	106	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	115	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	90	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	88	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	96	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	84	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	107	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	107	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 21-308236-1

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)
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)

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Test	Result	Unit	Method Reference
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	<0.10	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	104	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	107	%	AsureQuality Method (LC-MS/MS)
M8PFOS	98	%	AsureQuality Method (LC-MS/MS)
M4PFBA	101	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	116	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	108	%	AsureQuality Method (LC-MS/MS)
MPFHpA	106	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M8PFOA	110	%	AsureQuality Method (LC-MS/MS)
M9PFNA	98	%	AsureQuality Method (LC-MS/MS)
M6PFDA	110	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	116	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	109	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	94	%	AsureQuality Method (LC-MS/MS)
MPFOSA	99	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	106	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	106	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	105	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	107	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	110	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	110	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	105	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	107	%	AsureQuality Method (LC-MS/MS)

Blank

Relates to sample(s) 21-308236-2, 21-308236-3

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)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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)

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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	<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	98	%	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	105	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	98	%	AsureQuality Method (LC-MS/MS)
MPFHpA	95	%	AsureQuality Method (LC-MS/MS)
M8PFOA	106	%	AsureQuality Method (LC-MS/MS)
M9PFNA	105	%	AsureQuality Method (LC-MS/MS)
M6PFDA	106	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	114	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	133	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	54	%	AsureQuality Method (LC-MS/MS)
MPFOSA	119	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	111	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	123	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	129	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
DNMeFOSAA	124	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	132	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	117	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	90	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	107	%	AsureQuality Method (LC-MS/MS)

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 9Cl-PF3ONS (F-53B major) and 11Cl-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

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 9Cl-PF3ONS (F-53B major) and 11Cl-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

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Accreditation

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Appendix

Analyte LOR Summary

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

Analyte	LOR
Listing applies to samples: 21-308236-2, 21-308236-3	
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	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

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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: 21-308236-1	
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
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	

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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: 21-308236-2, 21-308236-3	
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
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	

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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
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

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

Analyte	Full Name
Listing applies to samples: 21-308236-1	
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

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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 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

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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

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AsureQuality Limited | 1C Quadrant Drive | Waiwhetu | Lower Hutt 5010 | Wellington | New Zealand
PO Box 31242 | Lower Hutt 5040 | Wellington | New Zealand
t. +64 4 570 8800 | e. cswellington@asurequality.com | w. www.asurequality.com

Certificate of Analysis

Submission Reference: A02744119
Final Report

Kate Walker
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 15-Nov-2021 **AsureQuality Reference: 21-309372** **Sample(s) Received:** 01-Nov-2021 10:00

Testing Period: 03-Nov-2021 to 15-Nov-2021
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW112.1_2_281021 **Lab ID:** 21-309372-1

Sample Condition: Acceptable **Sampled Date**: 28-Oct-2021

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.012	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.028	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.033	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.052	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.25	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.30	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0076	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.011	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.14	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.21	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.36	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.66	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)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.11	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.42	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.33	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.17	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.094	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.037	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 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's standard terms of business apply to the analysis set out in this report.

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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	<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	0.10	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	112	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	101	%	AsureQuality Method (LC-MS/MS)
M8PFOS	89	%	AsureQuality Method (LC-MS/MS)
M4PFBA	88	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	98	%	AsureQuality Method (LC-MS/MS)
MPFHpA	97	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	86	%	AsureQuality Method (LC-MS/MS)
M6PFDA	74	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	68	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	54	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	24 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	83	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	77	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	80	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	60	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	66	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	69	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	65	%	AsureQuality Method (LC-MS/MS)

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Test	Result	Unit	Method Reference
M4:2FTS	118	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	90	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	115	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: Duplicate of 21-309372-1A **Lab ID:** 21-309372-2

Sample Description: OHA_ADJ_GW112.1_2_281021 Duplicate

Sample Condition: Acceptable **Sampled Date**: 28-Oct-2021

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.012	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.027	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.034	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.051	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.26	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.31	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0081	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0087	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.12	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.18	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.31	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.62	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)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.11	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.43	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	0.092	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.035	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	<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)

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Test	Result	Unit	Method Reference
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	0.095	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	114	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	104	%	AsureQuality Method (LC-MS/MS)
M8PFOS	112	%	AsureQuality Method (LC-MS/MS)
M4PFBA	84	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	96	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	91	%	AsureQuality Method (LC-MS/MS)
MPFHpA	97	%	AsureQuality Method (LC-MS/MS)
M8PFOA	101	%	AsureQuality Method (LC-MS/MS)
M9PFNA	94	%	AsureQuality Method (LC-MS/MS)
M6PFDA	89	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	93	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	103	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	67	%	AsureQuality Method (LC-MS/MS)
MPFOSA	96	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	114	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	92	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	93	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	89	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	86	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	129	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	113	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	105	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	116	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 21-309372-1, 21-309372-2

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)

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Test	Result	Unit	Method Reference
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	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	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	<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)

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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	98	%	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	105	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	98	%	AsureQuality Method (LC-MS/MS)
MPFHpA	95	%	AsureQuality Method (LC-MS/MS)
M8PFOA	106	%	AsureQuality Method (LC-MS/MS)
M9PFNA	105	%	AsureQuality Method (LC-MS/MS)
M6PFDA	106	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	114	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	133	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	54	%	AsureQuality Method (LC-MS/MS)
MPFOSA	119	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	111	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	123	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	129	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	124	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	132	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	117	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	90	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	107	%	AsureQuality Method (LC-MS/MS)

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 9Cl-PF3ONS (F-53B major) and 11Cl-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

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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

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	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	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

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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 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 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

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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

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CHAIN OF CUSTODY RECORD - NEW ZEALAND

Eurofins Environment Testing New Zealand Ltd NZBN 9429 04602 4954

☑ Auckland Laboratory
35 O'Rorke Road, Penrose, Auckland 1061, NZ
0800 856450 (free dial) EnviroSampleAKL@eurofins.com

☐ Wellington Office
85 Port Road, Seaview, Lower Hutt 5011, NZ
0800 856450 (free dial) EnviroSampleWLG@eurofins.com

☐ Christchurch Laboratory
43 Detroit Drive Rolleston 7675, NZ
0800 856450 (free dial) EnviroSampleCHC@eurofins.com

☐ Melbourne Laboratory
6 Monterey Road Dandenong VIC 3175, AU
+61 3 8564 5000 EnviroSampleVic@eurofins.com

Company	Pattle Delamore Partners	Project №	A02744118	Project Manager	James Conway
Address	Level 5, 235 Broadway Newmarket Auckland 0612	Project Name		EDD Format (ESdat, EQuIS etc)	ESdat
Contact Name	James Conway				
Phone №	210535119				
Special Directions					
Purchase Order	A02744118				
Quote ID №					

Sampler(s)	TB and MS				
Handed over by					
Email for Invoice	accounts@pdp.co.nz				
Email for Results	james.conway@pdp.co.nz nerena.rhodes@pdp.co.nz				

Analyses (When metals are requested, please specify "Total" or "Filtered". SUITE code must be used to attract SUITE pricing)

Containers (Change container type & size if necessary)

Required Turnaround Time (TAT) (Default will be 5 days if not ticked)

☐ Overnight / same day ◆
☐ 1 day ◆
☐ 2 days ◆ ◆Surcharge will apply
☐ 3 days ◆
☑ 5 days (Standard)
☐ Other ( )

№	Client Sample ID	Sampled Date/Time dd/mm/yy hh:mm	Matrix Solid (S) Water (W)	PFAS suite	500mL Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL VOA vial	500mL PFAS Bottle	Jar (Glass or HDPE)	Other (Asbestos AS4964, WA Guidelines)	Sample Comments / Dangerous Goods Hazard Warning
1	OHA_BAI_GW111.2_3_281021	28/10/21	W	X									
2	OHA_ADJ_GW111.3_2_281021	26/10/21	W	X									
3													
4													
5													
6													
7													
8													
9													
10													
	Total Counts			2									

Date/Time: 19/11/21 9:30AM
Chilled: Yes / No
Temp: 13.9
Correction: +0.1
Final Temp: 14.0

Method of Shipment	☑ Courier (#)	☐ Hand Delivered	☐ Postal	Name		Signature		Date		Time	
Eurofins Laboratory Use Only	Received By	Kyla Alan	AKL | WLG | CHC | MEL	Signature	Alan	Date		Time		Temperature	
	Received By		AKL | WLG | CHC | MEL	Signature		Date		Time		Report №	842334

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Pattle Delamore Partners Ltd
PDP House Level 4, 235 Broadway
Newmarket
Auckland New Zealand 1023

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
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Attention: **James Conway**

Report **842334-W_INT**
Project name
Project ID A02744118
Received Date Nov 19, 2021

Client Sample ID			**OHA_BAI_GW 111.2_3_28102 1**	**OHA_ADJ_GW 111.3_2_28102 1**
Sample Matrix			**Water**	**Water**
Eurofins Sample No.			**K21-No43226**	**K21-No43227**
Date Sampled			**Oct 28, 2021**	**Oct 28, 2021**
Test/Reference	LOR	Unit		
Perfluoroalkyl carboxylic acids (PFCAs)				
Perfluorobutanoic acid (PFBA)[N11]	0.05	ug/L	< 0.05	< 0.05
Perfluoropentanoic acid (PFPeA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorohexanoic acid (PFHxA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluoroheptanoic acid (PFHpA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorononanoic acid (PFNA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorodecanoic acid (PFDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluoroundecanoic acid (PFUnDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorododecanoic acid (PFDoDA)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorotridecanoic acid (PFTrDA)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorotetradecanoic acid (PFTeDA)[N11]	0.01	ug/L	< 0.01	< 0.01
13C4-PFBA (surr.)	1	%	74	77
13C5-PFPeA (surr.)	1	%	93	97
13C5-PFHxA (surr.)	1	%	85	85
13C4-PFHpA (surr.)	1	%	71	75
13C8-PFOA (surr.)	1	%	74	75
13C5-PFNA (surr.)	1	%	90	78
13C6-PFDA (surr.)	1	%	61	51
13C2-PFUnDA (surr.)	1	%	52	47
13C2-PFDoDA (surr.)	1	%	32	33
13C2-PFTeDA (surr.)	1	%	10	14
Perfluoroalkyl sulfonamido substances				
Perfluorooctane sulfonamide (FOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	0.05	ug/L	< 0.05	< 0.05
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	0.05	ug/L	< 0.05	< 0.05
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	0.05	ug/L	< 0.05	< 0.05
13C8-FOSA (surr.)	1	%	71	64
D3-N-MeFOSA (surr.)	1	%	27	67

Client Sample ID			OHA_BAI_GW 111.2_3_28102 1	OHA_ADJ_GW 111.3_2_28102 1
Sample Matrix			**Water**	**Water**
Eurofins Sample No.			**K21-No43226**	**K21-No43227**
Date Sampled			**Oct 28, 2021**	**Oct 28, 2021**
Test/Reference	LOR	Unit		
Perfluoroalkyl sulfonamido substances				
D5-N-EtFOSA (surr.)	1	%	27	66
D7-N-MeFOSE (surr.)	1	%	64	61
D9-N-EtFOSE (surr.)	1	%	36	46
D5-N-EtFOSAA (surr.)	1	%	35	30
D3-N-MeFOSAA (surr.)	1	%	36	29
Perfluoroalkyl sulfonic acids (PFSAs)				
Perfluorobutanesulfonic acid (PFBS)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorononanesulfonic acid (PFNS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluoropropanesulfonic acid (PFPrS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluoropentanesulfonic acid (PFPeS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluoroheptanesulfonic acid (PFHpS)[N15]	0.01	ug/L	< 0.01	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	< 0.01	< 0.01
Perfluorodecanesulfonic acid (PFDS)[N15]	0.01	ug/L	< 0.01	< 0.01
13C3-PFBS (surr.)	1	%	88	83
18O2-PFHxS (surr.)	1	%	81	77
13C8-PFOS (surr.)	1	%	81	66
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	0.05	ug/L	< 0.05	< 0.05
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	0.01	ug/L	< 0.01	< 0.01
13C2-4:2 FTSA (surr.)	1	%	52	48
13C2-6:2 FTSA (surr.)	1	%	37	93
13C2-8:2 FTSA (surr.)	1	%	86	136
13C2-10:2 FTSA (surr.)	1	%	39	23
PFASs Summations				
Sum (PFHxS + PFOS)*	0.01	ug/L	< 0.01	< 0.01
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	< 0.01	< 0.01
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	< 0.01	< 0.01
Sum of WA DWER PFAS (n=10)*	0.05	ug/L	< 0.05	< 0.05
Sum of PFASs (n=30)*	0.1	ug/L	< 0.1	< 0.1

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Melbourne	Nov 26, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Melbourne	Nov 26, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Melbourne	Nov 26, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Melbourne	Nov 26, 2021	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
PFASs Summations	Melbourne	Nov 19, 2021	
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

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web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Eurofins Environment Testing NZ Limited
NZBN: 9429046024954

Auckland
35 O'Rorke Road
Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne
6 Monterey Road
Dandenong South VIC 3175
Phone : +61 3 8564 5000
NATA # 1261 Site # 1254

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Newcastle
4/52 Industrial Drive
Mayfield East NSW 2304
PO Box 60 Wickham 2293
Phone : +61 2 4968 8448
NATA # 1261 Site # 25079

Eurofins ARL Pty Ltd
ABN: 91 05 0159 898

Perth
46-48 Banksia Road
Welshpool WA 6106
Phone : +61 8 6253 4444
NATA # 2377 Site # 2370

Company Name: Pattle Delamore Partners Ltd
Address: PDP House Level 4, 235 Broadway
Newmarket
Auckland New Zealand 1023

Project Name:
Project ID: A02744118

Order No.: A02744118
Report #: 842334
Phone: 0011 64 9 523 6900
Fax: 0011 64 9 523 6901

Received: Nov 19, 2021 9:30 AM
Due: Nov 26, 2021
Priority: 5 Day
Contact Name: James Conway

Eurofins Analytical Services Manager : Swati Shahaney

Sample Detail						Per- and Polyfluoroalkyl Substances (PFASs)
Auckland Laboratory - IANZ# 1327						
Christchurch Laboratory - IANZ# 1290						
Melbourne Laboratory - NATA # 1261 Site # 1254						X
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	OHA_BAI_GW111.2_3_281021	Oct 28, 2021		Water	K21-No43226	X
2	OHA_ADJ_GW111.3_2_281021	Oct 28, 2021		Water	K21-No43227	X
Test Counts						2

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
ug/L: micrograms per litre
ppm: Parts per million
ppb: Parts per billion
%: Percentage
org/100mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs..

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM where no positive PFAS results have been reported have been reviewed and no data was affected.

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QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	Yes

Qualifier Codes/Comments

Code	Description
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).
N16	Analysis performed by Eurofins Environment Testing Australia

Authorised by:

Swati Shahaney	Analytical Services Manager
Joseph Edouard	Senior Analyst-PFAS (VIC)

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

Food and Environmental Submission Form/Chain of Custody

Customer Details

Company Name:* PDP

Contact Person:* James Conway

Email:* james.conway@pdp.co.nz

Contact Phone No.:* 0210535119

Address:

235 Broadway, Newmarket, Auckland,10

Submission Ref.: A02744119

Purchase Order No.: OHA_PFAS

Contract/Quote No.:

Reporting Details

Report Results To:* nzdf@esdat.net

Extra Copies To: nerena.rhodes@pdp.co.nz

Report each sample separately?*
If multiple samples are listed below, tick yes to receive an individual CoA for each sample. ☐ Yes ■ No

Sample Sent By (Name):* Tim Barlow Signed By:*

Date/Time Dispatched:

Condition sample(s) dispatched in: ☐ Ambient ☐ Chilled ☐ Frozen

☐ Quarantine *(include a copy of the MPI Import Permit/Transfer Form stating country of origin)*

☐ Return sample(s) after analysis *(Courier fees apply)*

NOTE: Samples will be discarded/returned 8 weeks after reporting unless otherwise instructed.

AQ to composite samples? ☐ Yes

Are samples hazardous to health?* ☐ Yes ■ No

Water samples submitted?* ■ Potable ■ Non-Potable

Submission Label
21-306843
01-Nov-2021 10:00

AsureQuality Limited
Wellington Laboratory
1C Quadrant Drive, Waiwhetu
Lower Hutt 5010
New Zealand
Tel: +64 4 570 8359
Email: GracefieldSR@asurequality.com

Urgency Details*

■ Normal Turn-around-time (TAT)

☐ Urgent Service *(please select from options below)*

☐ Half quoted TAT (50% surcharge)

☐ Quarter quoted TAT (100% surcharge)

NOTE: For urgent testing, please contact AQ prior to submitting samples to confirm availability.

Sample Name* *(unique sample identifier)*	Sample Type* *(Type of product/substance/material E.g., Potable Water, Soil, Biota Product, Apple, Cow Liver, Apple, Honey, Spinach)*	Sample Description *(additional sample information, to appear on report)*	Sampled Date *(used to determine holding time, if applicable)*	Testing Requirements* *(test or compounds to be tested for)*	AQ Ref. only
OHA_ADJ_GW108_3_291021	Non Potable		29/10/2021	PFAS Suite (Low level)	-1A

*Required information

Comments/Additional Information:
Please use submission references as ESDAT Project ID (SDG field)
Please CC submitter into email to nzdf@esdat.net

Received By (Name):* Lin
Signed By:*
10am 01/11/21 2 c
NZ Couriers LT229610966
EJB

Food and Environmental Submission Form/Chain of Custody

Customer Details

Company Name:* PDP

Contact Person:* James Conway

Email:* james.conway@pdp.co.nz

Contact Phone No.:* 021535119

Address:

235 Broadway, Newmarket, Auckland,10

Submission Ref.: A02744119

Purchase Order No.: OHA_PFAS

Contract/Quote No.:

Reporting Details

Report Results To:* nzdf@esdat.net

Extra Copies To: nerena.rhodes@pdp.co.nz

Report each sample separately?*
If multiple samples are listed below, tick yes to receive an individual CoA for each sample. ☐ Yes ■ No

Sample Sent By (Name):* Tim Barlow Signed By:*

Date/Time Dispatched:

Condition sample(s) dispatched in: ☐ Ambient ☐ Chilled ☐ Frozen

☐ Quarantine *(include a copy of the MPI Import Permit/Transfer Form stating country of origin)*

☐ Return sample(s) after analysis *(Courier fees apply)*

NOTE: Samples will be discarded/returned 8 weeks after reporting unless otherwise instructed.

AQ to composite samples? ☐ Yes

Are samples hazardous to health?* ☐ Yes ■ No

Water samples submitted?* ■ Potable ■ Non-Potable

Submission Label
21-306804
01-Nov-2021 10:00

AsureQuality Limited

Wellington Laboratory
1C Quadrant Drive, Waiwhetu
Lower Hutt 5010
New Zealand
Tel: +64 4 570 8359
Email: GracefieldSR@asurequality.com

Urgency Details*

■ Normal Turn-around-time (TAT)

☐ Urgent Service *(please select from options below)*

☐ Half quoted TAT (50% surcharge)

☐ Quarter quoted TAT (100% surcharge)

NOTE: For urgent testing, please contact AQ prior to submitting samples to confirm availability.

Sample Name* *(unique sample identifier)*	Sample Type* *(Type of product/substance/material E.g., Potable Water, Soil, Biota Product, Apple, Cow Liver, Apple, Honey, Spinach)*	Sample Description *(additional sample information, to appear on report)*	Sampled Date *(used to determine holding time, if applicable)*	Testing Requirements* *(test or compounds to be tested for)*	AQ Ref. only
OHA_ADJ_GW106_2_291021	Non Potable		29/10/2021	PFAS Suite (Low level)	-1A

*Required information

Comments/Additional Information:

Please use submission references as ESDAT Project ID (SDG field)
Please CC submitter into email to nzdf@esdat.net

Received By (Name):* Liz

Signed By:*

10am 01/11/21 2 C

NZ Couriers LT229610966

AsureQuality Food and Environmental Submission Form/Chain of Custody

Customer Details

Company Name:* PDP

Contact Person:* James Conway

Email:* james.conway@pdp.co.nz

Contact Phone No.:* 0215351119

Address:

235 Broadway, Newmarket, Auckland,10

Submission Ref.: A02744119

Purchase Order No.: OHA_PFAS

Contract/Quote No.:

Reporting Details

Report Results To:* nzdf@esdat.net

Extra Copies To: nerena.rhodes@pdp.co.nz

Report each sample separately?*
If multiple samples are listed below, tick yes to receive an individual CoA for each sample. ☐ Yes ■ No

Sample Sent By (Name):* Tim Barlow Signed By:*

Date/Time Dispatched:

Condition sample(s) dispatched in: ☐ Ambient ☐ Chilled ☐ Frozen

☐ Quarantine *(include a copy of the MPI Import Permit/Transfer Form stating country of origin)*

☐ Return sample(s) after analysis *(Courier fees apply)*

NOTE: Samples will be discarded/returned 8 weeks after reporting unless otherwise instructed.

AQ to composite samples? ☐ Yes

Are samples hazardous to health?* ☐ Yes ■ No

Water samples submitted?* ■ Potable ■ Non-Potable

Submission Label
21-306870
01-Nov-2021 10:00

AsureQuality Limited
Wellington Laboratory
1C Quadrant Drive, Waiwhetu
Lower Hutt 5010
New Zealand
Tel: +64 4 570 8359
Email: GracefieldSR@asurequality.com

Urgency Details*

■ Normal Turn-around-time (TAT)

☐ Urgent Service *(please select from options below)*

☐ Half quoted TAT (50% surcharge)

☐ Quarter quoted TAT (100% surcharge)

NOTE: For urgent testing, please contact AQ prior to submitting samples to confirm availability.

Sample Name* *(unique sample identifier)*	Sample Type* *(Type of product/substance/material E.g., Potable Water, Soil, Biota Product, Apple, Cow Liver, Apple, Honey, Spinach)*	Sample Description *(additional sample information, to appear on report)*	Sampled Date *(used to determine holding time, if applicable)*	Testing Requirements* *(test or compounds to be tested for)*	AQ Ref. only
OHA_ADJ_GW107_3_291021	Non Potable		29/10/2021	PFAS Suite (Low level)	-1A
OHA_ADJ_GWDPM_1_291021			29/10/2021		-2A
OHA_ADJ_GWDPN_1_291021			29/10/2021		-3A
OHA_ADJ_GWDPO_1_291021			29/10/2021		-4A

**Required information*

Comments/Additional Information:
Please use submission references as ESDAT Project ID (SDG field)
Please CC submitter into email to nzdf@esdat.net

Received By (Name):* Liv
Signed By:*

10am 01/11/21 8 C

NZ Couriers LT229610966

Food and Environmental Submission Form/Chain of Custody

Customer Details

Company Name:* PDP

Contact Person:* James Conway

Email:* james.conway@pdp.co.nz

Contact Phone No.:* 0210535119

Address:

235 Broadway, Newmarket, Auckland,10

Submission Ref.: A02744119

Purchase Order No.: OHA_PFAS

Contract/Quote No.:

Reporting Details

Report Results To:* nzdf@esdat.net

Extra Copies To: nerena.rhodes@pdp.co.nz

Report each sample separately?*
If multiple samples are listed below, tick yes to receive an individual CoA for each sample. ☐ Yes ■ No

Sample Sent By (Name):* Tim Barlow Signed By:*

Date/Time Dispatched:

Condition sample(s) dispatched in: ☐ Ambient ☐ Chilled ☐ Frozen

☐ Quarantine *(include a copy of the MPI Import Permit/Transfer Form stating country of origin)*

☐ Return sample(s) after analysis *(Courier fees apply)*

NOTE: Samples will be discarded/returned 8 weeks after reporting unless otherwise instructed.

AQ to composite samples? ☐ Yes

Are samples hazardous to health?* ☐ Yes ■ No

Water samples submitted?* ■ Potable ■ Non-Potable

Submission Label
21-306774
01-Nov-2021 10:00

AsureQuality Limited
Wellington Laboratory
1C Quadrant Drive, Waiwhetu
Lower Hutt 5010
New Zealand
Tel: +64 4 570 8359
Email: GracefieldSR@asurequality.com

Urgency Details*

■ Normal Turn-around-time (TAT)

☐ Urgent Service *(please select from options below)*

☐ Half quoted TAT (50% surcharge)

☐ Quarter quoted TAT (100% surcharge)

NOTE: For urgent testing, please contact AQ prior to submitting samples to confirm availability.

Sample Name* *(unique sample identifier)*	Sample Type* *(Type of product/substance/material E.g., Potable Water, Soil, Biota Product, Apple, Cow Liver, Apple, Honey, Spinach)*	Sample Description *(additional sample information, to appear on report)*	Sampled Date *(used to determine holding time, if applicable)*	Testing Requirements* *(test or compounds to be tested for)*	AQ Ref. only
OHA_ADJ_SW33_6_291021	Non Potable		29/10/2021	PFAS Suite (Low level)	-1A
OHA_ADJ_SWDPG_1_291021			29/10/21	Hold Cold	

*Required information

Comments/Additional Information:

Please use submission references as ESDAT Project ID (SDG field)
Please CC submitter into email to nzdf@esdat.net

Received By (Name):* Liz

Signed By:*

10am
01/11/21
4 c

NZ Couriers
LT229610966

AsureQuality Food and Environmental Submission Form/Chain of Custody

Submission Label
21-306853
01-Nov-2021 10:00

Customer Details

Company Name:* PDP
Contact Person:* James Conway
Email:* james.conway@pdp.co.nz
Contact Phone No.:* 0210535119
Address:

235 Broadway, Newmarket, Auckland,10

Submission Ref.: A02744119
Purchase Order No.: OHA_PFAS
Contract/Quote No.:

Reporting Details

Report Results To:* nzdf@esdat.net
Extra Copies To: nerena.rhodes@pdp.co.nz

Report each sample separately?*
If multiple samples are listed below, tick yes to receive an individual CoA for each sample. ☐ Yes ■ No

Sample Sent By (Name):* Tim Barlow Signed By:*
Date/Time Dispatched:

Condition sample(s) dispatched in: ☐ Ambient ☐ Chilled ☐ Frozen
☐ Quarantine *(include a copy of the MPI Import Permit/Transfer Form stating country of origin)*
☐ Return sample(s) after analysis *(Courier fees apply)*
NOTE: Samples will be discarded/returned 8 weeks after reporting unless otherwise instructed.

AQ to composite samples? ☐ Yes
Are samples hazardous to health?* ☐ Yes ■ No
Water samples submitted?* ■ Potable ■ Non-Potable

AsureQuality Limited
Wellington Laboratory
1C Quadrant Drive, Waiwhetu
Lower Hutt 5010
New Zealand
Tel: +64 4 570 8359
Email: GracefieldSR@asurequality.com

Urgency Details*

■ Normal Turn-around-time (TAT)
☐ Urgent Service *(please select from options below)*
☐ Half quoted TAT (50% surcharge)
☐ Quarter quoted TAT (100% surcharge)

NOTE: For urgent testing, please contact AQ prior to submitting samples to confirm availability.

Sample Name* *(unique sample identifier)*	Sample Type* *(Type of product/substance/material E.g., Potable Water, Soil, Biota Product, Apple, Cow Liver, Apple, Honey, Spinach)*	Sample Description *(additional sample information, to appear on report)*	Sampled Date *(used to determine holding time, if applicable)*	Testing Requirements* *(test or compounds to be tested for)*	AQ Ref. only
OHA_ADJ_SW36_7_291021	Non Potable		29/10/2021	PFAS Suite (Low level)	-1A
OHA_ADJ_BPTAP_1_291021	Potable		29/10/2021		-2A

**Required information*

Comments/Additional Information:
Please use submission references as ESDAT Project ID (SDG field)
Please CC submitter into email to nzdf@esdat.net

Received By (Name):* Lisa
Signed By:*
10am 01/11/21 4 C
NZ Couriers LT229610966

AsureQuality Food and Environmental Submission Form/Chain of Custody

Customer Details

Company Name:* PDP

Contact Person:* James Conway

Email:* james.conway@pdp.co.nz

Contact Phone No.:* 0210535119

Address:

235 Broadway, Newmarket, Auckland,10

Submission Ref.: A02744119

Purchase Order No.: OHA_PFAS

Contract/Quote No.:

Reporting Details

Report Results To:* nzdf@esdat.net

Extra Copies To: nerena.rhodes@pdp.co.nz

Report each sample separately?*
If multiple samples are listed below, tick yes to receive an individual CoA for each sample.

☐ Yes ■ No

Sample Sent By (Name):* Tim Barlow Signed By:*

Date/Time Dispatched:

Condition sample(s) dispatched in: ☐ Ambient ☐ Chilled ☐ Frozen

☐ Quarantine *(include a copy of the MPI Import Permit/Transfer Form stating country of origin)*

☐ Return sample(s) after analysis *(Courier fees apply)*

NOTE: Samples will be discarded/returned 8 weeks after reporting unless otherwise instructed.

AQ to composite samples? ☐ Yes

Are samples hazardous to health?* ☐ Yes ■ No

Water samples submitted?* ■ Potable ■ Non-Potable

Submission Label
21-306774
01-Nov-2021 10:00

AsureQuality Limited
Wellington Laboratory
1C Quadrant Drive, Waiwhetu
Lower Hutt 5010
New Zealand
Tel: +64 4 570 8359
Email: GracefieldSR@asurequality.com

Urgency Details*

■ Normal Turn-around-time (TAT)

☐ Urgent Service *(please select from options below)*

☐ Half quoted TAT (50% surcharge)

☐ Quarter quoted TAT (100% surcharge)

NOTE: For urgent testing, please contact AQ prior to submitting samples to confirm availability.

Sample Name* *(unique sample identifier)*	Sample Type* *(Type of product/substance/material E.g., Potable Water, Soil, Biota Product, Apple, Cow Liver, Apple, Honey, Spinach)*	Sample Description *(additional sample information, to appear on report)*	Sampled Date *(used to determine holding time, if applicable)*	Testing Requirements* *(test or compounds to be tested for)*	AQ Ref. only
OHA_ADJ_SW33_6_291021	Non Potable		29/10/2021	PFAS Suite (Low level)	-1A
OHA_ADJ_SWDPG_1_291021			29/10/21	Hold Cold	

*Required information

Comments/Additional Information:
Please use submission references as ESDAT Project ID (SDG field)
Please CC submitter into email to nzdf@esdat.net

Received By (Name):* Liz
Signed By:* [signature]
10am 01/11/21 4 c
NZ Couriers
LT229610966
GB

AsureQuality Food and Environmental Submission Form/Chain of Custody

Customer Details

Company Name:* PDP

Contact Person:* James Conway

Email:* james.conway@pdp.co.nz

Contact Phone No.:* 0210535119

Address:

235 Broadway, Newmarket, Auckland,10

Submission Ref.: A02744119

Purchase Order No.: OHA_PFAS

Contract/Quote No.:

Reporting Details

Report Results To:* nzdf@esdat.net

Extra Copies To: nerena.rhodes@pdp.co.nz

Report each sample separately?*
If multiple samples are listed below, tick yes to receive an individual CoA for each sample. ☐ Yes ■ No

Sample Sent By (Name):* ~~Tom Harvey~~ TIM BARLOW Signed By:*

Date/Time Dispatched:

Condition sample(s) dispatched in: ☐ Ambient ■ Chilled ☐ Frozen

☐ Quarantine *(include a copy of the MPI Import Permit/Transfer Form stating country of origin)*

☐ Return sample(s) after analysis *(Courier fees apply)*

NOTE: Samples will be discarded/returned 8 weeks after reporting unless otherwise instructed.

AQ to composite samples? ☐ Yes

Are samples hazardous to health?* ☐ Yes ■ No

Water samples submitted?* ■ Potable ☐ Non-Potable

AQ Project Reference
(AQ Use Only)

AsureQuality Limited
Wellington Laboratory
1C Quadrant Drive, Waiwhetu
Lower Hutt 5010
New Zealand
Tel: +64 4 570 8359
Email: GracefieldSR@asurequality.com

Urgency Details*

■ Normal Turn-around-time (TAT)

☐ Urgent Service *(please select from options below)*

☐ Half quoted TAT (50% surcharge)

☐ Quarter quoted TAT (100% surcharge)

NOTE: For urgent testing, please contact AQ prior to submitting samples to confirm availability.

Sample Name* *(unique sample identifier)*	Sample Type* *(Type of product/substance/material E.g., Potable Water, Soil, Biota Product, Apple, Cow Liver, Apple, Honey, Spinach)*	Sample Description *(additional sample information, to appear on report)*	Sampled Date *(used to determine holding time, if applicable)*	Testing Requirements* *(test or compounds to be tested for)*	AQ Ref. only
OHA_ADJ_GW67_6_271021	Potable		27/10/2021	PFAS Suite (Low level)	

**Required information*

Comments/Additional Information:
Please use submission references as ESDAT Project ID (SDG field)
Please CC submitter into email to nzdf@esdat.net

Received By (Name):*
Signed By:*

13:35 28/10/21 1 C NZ Couriers 10782237

Food and Environmental Submission Form/Chain of Custody

Customer Details

Company Name:* PDP

Contact Person:* James Conway

Email:* james.conway@pdp.co.nz

Contact Phone No.:* 0210535119

Address:

235 Broadway, Newmarket, Auckland,10

Submission Ref.: A02744118

Purchase Order No.: OHA_PFAS

Contract/Quote No.:

Reporting Details

Report Results To:* nzdf@esdat.net

Extra Copies To: nerena.rhodes@pdp.co.nz

Report each sample separately?*
If multiple samples are listed below, tick yes to receive an individual CoA for each sample. ☐ Yes ■ No

Sample Sent By (Name):* Tim Barlow Signed By:*

Date/Time Dispatched: 28.10.2021 08:00

Condition sample(s) dispatched in: ☐ Ambient ■ Chilled ☐ Frozen

☐ Quarantine *(include a copy of the MPI Import Permit/Transfer Form stating country of origin)*

☐ Return sample(s) after analysis *(Courier fees apply)*

NOTE: Samples will be discarded/returned 8 weeks after reporting unless otherwise instructed.

AQ to composite samples? ☐ Yes

Are samples hazardous to health?* ☐ Yes ■ No

Water samples submitted?* ■ Potable ☐ Non-Potable

AQ Project Reference
(AQ Use Only)

AsureQuality Limited
Wellington Laboratory
1C Quadrant Drive, Waiwhetu
Lower Hutt 5010
New Zealand
Tel: +64 4 570 8359
Email: GracefieldSR@asurequality.com

Urgency Details*

■ Normal Turn-around-time (TAT)

☐ Urgent Service *(please select from options below)*

☐ Half quoted TAT (50% surcharge)

☐ Quarter quoted TAT (100% surcharge)

NOTE: For urgent testing, please contact AQ prior to submitting samples to confirm availability.

Sample Name* *(unique sample identifier)*	Sample Type* *(Type of product/substance/material E.g., Potable Water, Soil, Biota Product, Apple, Cow Liver, Apple, Honey, Spinach)*	Sample Description *(additional sample information, to appear on report)*	Sampled Date *(used to determine holding time, if applicable)*	Testing Requirements* *(test or compounds to be tested for)*	AQ Ref. only
OHA_SHW_SW4_4_271021	Non Potable		27/10/2021	PFAS Suite (Low level)	

**Required information*

Comments/Additional Information:
Please use submission references as ESDAT Project ID (SDG field)
Please CC submitter into email to nzdf@esdat.net

Received By (Name):*
Signed By:*

13:35 28/10/21 1 C NZ Couriers 10782237

Food and Environmental Submission Form/Chain of Custody

Customer Details

Company Name:* PDP

Contact Person:* James Conway

Email:* james.conway@pdp.co.nz

Contact Phone No.:* 0210535119

Address:

235 Broadway, Newmarket, Auckland,10

Submission Ref.: A02744118

Purchase Order No.: OHA_PFAS

Contract/Quote No.:

Reporting Details

Report Results To:* nzdf@esdat.net

Extra Copies To: nerena.rhodes@pdp.co.nz

Report each sample separately?*
If multiple samples are listed below, tick yes to receive an individual CoA for each sample. ☐ Yes ■ No

Sample Sent By (Name):* Tim Barlow Signed By:*

Date/Time Dispatched: 28.10.2021 08:00

Condition sample(s) dispatched in: ☐ Ambient ■ Chilled ☐ Frozen

☐ Quarantine *(include a copy of the MPI Import Permit/Transfer Form stating country of origin)*

☐ Return sample(s) after analysis *(Courier fees apply)*

NOTE: Samples will be discarded/returned 8 weeks after reporting unless otherwise instructed.

AQ to composite samples? ☐ Yes

Are samples hazardous to health?* ☐ Yes ■ No

Water samples submitted?* ■ Potable ■ Non-Potable

AQ Project Reference
(AQ Use Only)

AsureQuality Limited
Wellington Laboratory
1C Quadrant Drive, Waiwhetu
Lower Hutt 5010
New Zealand
Tel: +64 4 570 8359
Email: GracefieldSR@asurequality.com

Urgency Details*

■ Normal Turn-around-time (TAT)

☐ Urgent Service *(please select from options below)*

☐ Half quoted TAT (50% surcharge)

☐ Quarter quoted TAT (100% surcharge)

NOTE: For urgent testing, please contact AQ prior to submitting samples to confirm availability.

Sample Name* *(unique sample identifier)*	Sample Type* *(Type of product/substance/material E.g., Potable Water, Soil, Biota Product, Apple, Cow Liver, Apple, Honey, Spinach)*	Sample Description *(additional sample information, to appear on report)*	Sampled Date *(used to determine holding time, if applicable)*	Testing Requirements* *(test or compounds to be tested for)*	AQ Ref. only
OHA_FTA_MW4_7_271021	Non Potable		27/10/2021	PFAS Suite (High level)	
OHA_RUP_MW6_8_271021	Non Potable		27/10/2021	PFAS Suite (High level)	
OHA_DTK_MW9_7_271021	Non Potable		27/10/2021	PFAS Suite (High level)	
OHA_FTA_WS1_6_ 271021	Non Potable		27/10/2021	PFAS Suite (High level)	

**Required information*

Comments/Additional Information:
Please use submission references as ESDAT Project ID (SDG field)
Please CC submitter into email to nzdf@esdat.net

Received By (Name):*
Signed By:*

13:35 28/10/21 4 C NZ Couriers 10782237

AsureQuality Food and Environmental Submission Form/Chain of Custody

Customer Details

Company Name:* PDP

Contact Person:* James Conway

Email:* james.conway@pdp.co.nz

Contact Phone No.:* 0210535119

Address:

235 Broadway, Newmarket, Auckland,10

Submission Ref.: A02744119

Purchase Order No.: OHA_PFAS

Contract/Quote No.:

Reporting Details

Report Results To:* nzdf@esdat.net

Extra Copies To: nerena.rhodes@pdp.co.nz

Report each sample separately?*
If multiple samples are listed below, tick yes to receive an individual CoA for each sample. ☐ Yes ■ No

Sample Sent By (Name):* Tim Barlow Signed By:*

Date/Time Dispatched:

Condition sample(s) dispatched in: ☐ Ambient ■ Chilled ☐ Frozen

☐ Quarantine *(include a copy of the MPI Import Permit/Transfer Form stating country of origin)*

☐ Return sample(s) after analysis *(Courier fees apply)*

NOTE: Samples will be discarded/returned 8 weeks after reporting unless otherwise instructed.

AQ to composite samples? ☐ Yes

Are samples hazardous to health?* ☐ Yes ■ No

Water samples submitted?* ■ Potable ■ Non-Potable

AQ Project Reference
(AQ Use Only)

AsureQuality Limited
Wellington Laboratory
1C Quadrant Drive, Waiwhetu
Lower Hutt 5010
New Zealand
Tel: +64 4 570 8359
Email: GracefieldSR@asurequality.com

Urgency Details*

■ Normal Turn-around-time (TAT)

☐ Urgent Service *(please select from options below)*

☐ Half quoted TAT (50% surcharge)

☐ Quarter quoted TAT (100% surcharge)

NOTE: For urgent testing, please contact AQ prior to submitting samples to confirm availability.

Sample Name* *(unique sample identifier)*	Sample Type* *(Type of product/substance/material E.g., Potable Water, Soil, Biota Product, Apple, Cow Liver, Apple, Honey, Spinach)*	Sample Description *(additional sample information, to appear on report)*	Sampled Date *(used to determine holding time, if applicable)*	Testing Requirements* *(test or compounds to be tested for)*	AQ Ref. only
OHA_ADJ_GW112.2_ 2_271021	Non Potable		27/102021	PFAS Suite (High level)	
				~~PFAS Suite (Low level)~~	

*Required information

Comments/Additional Information:
Please use submission references as ESDAT Project ID (SDG field)
Please CC submitter into email to nzdf@esdat.net

Received By (Name):*
Signed By:*

13:35 28/10/21 1 C NZ Couriers 10782237

Food and Environmental Submission Form/Chain of Custody

Customer Details

Company Name:* PDP

Contact Person:* James Conway

Email:* james.conway@pdp.co.nz

Contact Phone No.:* 0210535119

Address:

235 Broadway, Newmarket, Auckland,10

Submission Ref.: A02744118

Purchase Order No.: OHA_PFAS

Contract/Quote No.:

Reporting Details

Report Results To:* nzdf@esdat.net

Extra Copies To: nerena.rhodes@pdp.co.nz

Report each sample separately?*
If multiple samples are listed below, tick yes to receive an individual CoA for each sample. ☐ Yes ■ No

Sample Sent By (Name):* Tim Barlow Signed By:*

Date/Time Dispatched:

Condition sample(s) dispatched in: ☐ Ambient ■ Chilled ☐ Frozen

☐ Quarantine *(include a copy of the MPI Import Permit/Transfer Form stating country of origin)*

☐ Return sample(s) after analysis *(Courier fees apply)*

NOTE: Samples will be discarded/returned 8 weeks after reporting unless otherwise instructed.

AQ to composite samples? ☐ Yes

Are samples hazardous to health?* ☐ Yes ■ No

Water samples submitted?* ■ Potable ■ Non-Potable

AQ Project Reference
(AQ Use Only)

AsureQuality Limited
Wellington Laboratory
1C Quadrant Drive, Waiwhetu
Lower Hutt 5010
New Zealand
Tel: +64 4 570 8359
Email: GracefieldSR@asurequality.com

Urgency Details*

■ Normal Turn-around-time (TAT)

☐ Urgent Service *(please select from options below)*

☐ Half quoted TAT (50% surcharge)

☐ Quarter quoted TAT (100% surcharge)

NOTE: For urgent testing, please contact AQ prior to submitting samples to confirm availability.

Sample Name* *(unique sample identifier)*	Sample Type* *(Type of product/substance/material E.g., Potable Water, Soil, Biota Product, Apple, Cow Liver, Apple, Honey, Spinach)*	Sample Description *(additional sample information, to appear on report)*	Sampled Date *(used to determine holding time, if applicable)*	Testing Requirements* *(test or compounds to be tested for)*	AQ Ref. only
OHA_FTA_WS1_6_271021	Non Potable		27/10/2021	PFAS Suite (Low level)	

**Required information*

Comments/Additional Information:
Please use submission references as ESDAT Project ID (SDG field)
Please CC submitter into email to nzdf@esdat.net

Received By (Name):*
Signed By:*

13:35 28/10/21 1 C NZ Couriers 10782237

Appendix B: GW Level Measurements

Appendix B: October 2021 Well Details and Water Level

Monitoring Well Ref	GW106	GW107	GW108	GW109	GW6	MW4	MW6	MW9
Total Depth of Well (m below TOC [1])	6.96	10.7	3.88	7.8	6.9	9.9	4.5	4.5
Diameter (mm)	50	50	50	50	1070	50	40	40
TOC (m bgl)	0.05	0.08	0.04	0.04	0.67 m agl [2]	0.00	0.09	0.06
Date	**29/10/2021**				**28/10/2021**	**27/10/2021**		
Depth to Water (m below ground level)	2.13	2.97	1.22	4.04	3.93	5.79	3.33	1.47
Water depth (m below TOC)	2.08	2.89	1.18	4.00	4.60	5.79	3.24	1.41

Monitoring Well Ref	GW111.1	GW111.2	GW111.3	GW112.1	GW112.2
Total Depth of Well (m below TOC [1])	11.24	40.5	84.5	10.4	55.4
Diameter (mm)	50	50	50	50	50
TOC (m bgl)	0.48 m agl [2]	0.49 m agl [2]	0.50 m agl [2]	0.55 m agl [2]	1.08 m agl [2]
Date	**28/10/2021**				**26/10/2021**
Depth to Water (m below ground level)	5.98	7.79	5.09	0.65	0.48 m agl [2]
Water depth (m below TOC)	6.46	8.28	5.59	1.20	0.61

Notes:
1. TOC = top of casing.
2. agl = above ground level.

Appendix C: Field Sheets

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Land owner: NZDF

Address: Fire Training Area.

Weather: Sunny, some clouds, warm

Sample point: tap / (well) / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: Low flow

QA/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)

Job Number: ~~A02684802~~ A0274118

Sample Code (Name): MW4

Date and time: 27/10/21 11:50

Coordinates (NZTM): E

N

Sampled By: TB (Clean hands)

MS (Dirty hands)

Site Photos taken? ☑ Yes ☐ No

Water use: Drinking water / Stock watering / Fodder irrigation / (Non-potable)

Animals observed on site: Chickens / cows / sheep / pigs / goats

Minimum volume between readings: 1 sample train volume (see formula below)

$8 \times 3.141 \times 40.3225 / 4000$
$= 0.25 + 1L$ (flow cell)

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before		11:54	0	15.2	6.61	468	63.4	1.4	5.797	50 *
During		11:59	1.25	14.6	6.52	468.2	56.3	0.29	5.799	850 *
During		12:04	1.25	14.8	6.51	468.5	55.7	0.24	5.795	12.6
During		12:09	1.25	14.8	6.49	468.8	54.6	0.16	5.796	16.7
During		12:14	1.25	14.6	6.49	468.1	52	0.14	5.798	24
During		12:19	1.25	14.6	6.48	468.1	51.2	0.12	5.798	27.5
During										
During		Sample @		12:20		DTW = 5.795m		BTOC		
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Comments: DTW - 5.785 m BTOC
DTB - 9.90 m BTOC
Water clear during pumping.
* denotes parameter fluctuating very quickly - not stable. Reading is approx. average.

Sample Train Volume Calculation (L)
(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.
Where d = internal diameter of sample tube in **mm**
Water sample internal ø = 6mm ≈ 30mL per meter

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

Stabilisation criteria field sheet completed? ☐ Yes

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Land owner: NZDF

Address: Base

Weather: Fine, breezy

Sample point: tap / well / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: low flow

QA/QA Sample Codes:

Duplicate: GWDPV

Trip Blank: GWDPI

Field Blank: GWDPK

Rinsate Blank (include description of equipment cleaned e.g. dipper):

NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)

Job Number: ~~A02684802~~ A0274411B

Sample Code (Name): MW6

Date and time: 27/10/21

Coordinates (NZTM): E

N

Sampled By: MS (Clean hands)

TB (Dirty hands)

Site Photos taken? ☐ Yes ☑ No

Water use: Drinking water / Stock watering / Fodder irrigation / ~~Non-potable~~

Animals observed on site: Chickens / cows / sheep / pigs / goats

Minimum volume between readings: 1 sample train volume (see formula below)

$(4 \times 3.141 \times 40.3225 / 4000) \times 1L$

$= 1.1\ L$

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	0	1258	0	15.6	6.68	245.7	173.4	9.24	3.270	3.10
During	4	1302	1.5	14.6	6.54	251.5	193.2	9.23	3.305	4.56
During	~~8~~	1306	1.1	14.6	6.51	252.5	197.3	9.24	3.350	4.30
During	12	1310	1.1	14.5	6.50	253.3	204.0	9.24	3.390	4.50
During										
During										
During										
During										
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Comments DTW = 3.235

DTB = 4.42

Sample Train Volume Calculation (L)

(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.

Where d = internal diameter of sample tube in **mm**

Water sample internal ø = 6mm ≈ 30mL per meter

Water clear, non-turbid

Depth post sampling = 3.430

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
Stabilisation criteria field sheet completed?	☐ Yes				

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Land owner: NZDF

Address:

Weather: Overcast; some sun showers. humid.

Sample point: tap / well / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: Low flow

QA/QA Sample Codes: GWDPH

Duplicate ~~AQUTO~~

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)

Job Number: ~~A02684802~~ A0276418

Sample Code (Name): MW9

Date and time: 22/10/21

Coordinates: (NZTM) E

N

Sampled By: TB (Clean hands)

MS (Dirty hands)

Site Photos taken? ☑ Yes ☐ No

Water use: Drinking water / Stock watering / Fodder irrigation / Non-potable

Animals observed on site: Chickens / cows / sheep / pigs / goats

Minimum volume between readings: 1 sample train volume (see formula below)

4.45 x 3.141 x 40.3225 / 4000

= 0.1409 + 1L = 1.14L

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before		09:52	0	15.4	6.09	275.3	60.6	2.4	1.555	568.4
During		09:56	1.5	14.3	6.01	256.7	68.3	1.03	1.717	154.8
During		10:00	1.5	14.2	5.99	264.2	66.2	0.74	1.761	145.6
During		10:04	1.2	14.3	5.98	267.7	64.8	0.55	1.795	155.8
During		10:07	1.3	14.3	5.98	268.2	65.1	0.45	1.849	148.4
During										
During	Sample @	10:15								
During										
During	Dip after Sample =					1.945				
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Sample Train Volume Calculation (L)
(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.
Where d = internal diameter of sample tube in **mm**

Water sample internal ø = 6mm ≈ 30mL per meter

Comments DTW: 1.706 BTOC
DTB: 4.45m BTOC
Casing = 7.5cm 6yl.
Iron oxide staining in Water @ end of pump.

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
Stabilisation criteria field sheet completed?	☐ Yes				

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Land owner:

Address: Bailey Rd

Weather:

Sample point: tap / well / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: peri pump

QA/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)

Job Number: ~~A02684802~~ A0274118

Sample Code (Name): GWIII-1

Date and time: 28/10/21

Coordinates (NZTM): E

N

Sampled By: Tim B. (Clean hands)

Mark S. (Dirty hands)

Site Photos taken? ☐ Yes ☑ No

Water use: Drinking water / Stock watering / Fodder irrigation / Non-potable

Animals observed on site: Chickens / cows / sheep / pigs / goats

Minimum volume between readings: 1 sample train volume (see formula below)

7.5 x 3.141 x 40.3225 / 4000

0.23 (+ cell vol).

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before		14:41	Cell	15.2	6.48	321.4	93.3	63.4	6.465	3.92
During		14:46	1.25	14	6.29	313.9	149.8	2.2	6.465	12.46
During		14:50	1.25	14.1	6.27	312.9	163.9	2.12	6.47	19.44
During		14:53	1.25	14.1	6.23	306.2	175.4	2.07	6.47	27.91
During		14:57	1.25	14.0	6.22	307.3	182.9	2.04	6.47	46.5
During		15:01	1.25	14.1	6.19	300.5	184.2	2.00	6.47	76.9
During		15:04	1.25	14.1	6.18	298.1	185.9	1.97	6.47	94.9
During										
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Sample Train Volume Calculation (L)

(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.

Where d = internal diameter of sample tube in **mm**

Water sample internal ø = 6mm ≈ 30mL per meter

Comments DTW = 6.46 6 TOC

DTB = 11.50 6 TOC

Water = clear

Sampled @ 1508

Level loggs installed to 8.80m below TOC

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
Stabilisation criteria field sheet completed?	☐ Yes				

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Land owner: _____

Address: _____

Weather: _____

Sample point: tap / well / surface water

Description of sample point: _____

Distance of sample point from bore: _____ (m)

Sampling equipment: _____

QA/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)

Job Number: ~~A02684802~~ A0274611B

Sample Code (Name): GWIII.2

Date and time: 28/10/21

Coordinates (NZTM): E _____ N _____

Sampled By: Tim B (Clean hands) Max S. (Dirty hands)

Site Photos taken? ☐ Yes ☐ No

Water use: Drinking water / Stock watering / Fodder irrigation / Non-potable

Animals observed on site: Chickens / cows / sheep / pigs / goats _____

Minimum volume between readings: 1 sample train volume (see formula below)

37.5 X 3.141 x 40.3225/4000

1.2L

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC (µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before		13:42	Cell	~~11.3~~	7.2	708	-106.8	0.52	8.28	53.6
During		13:46	2L	13.8	6.96	667	-88.7	0.24	8.327	60.1
During		13:48	2L	13.8	6.66	664	-69.2	0.26	8.32	22.2
During		13:50	2L	13.7	6.50	657	-49	0.23	8.34	18.2
During		13:53	2L	13.6	6.6	654	-45.9	0.23	8.34	14.7
During		13:56	2L	13.6	6.5	652	-30.7	0.24	8.34	11.1
During		13:59	2L	13.6	6.42	649	-38.1	0.25	8.34	8.5
During										
During		Sample @ 14:00					DTW =			
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Sample Train Volume Calculation (L)
(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.
Where d = internal diameter of sample tube in **mm**

Water sample internal ø = 6mm ≈ 30mL per meter

Comments: DTW = 8.28m BTOC
DTB = 37.5 BTOC.
Water appears cloudy.

Level logger installed 11.03 m below TOC

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
Stabilisation criteria field sheet completed?	☐ Yes				

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: ~~Ohakea~~ / Woodbourne (circle as appropriate)

Land owner:

Address: Bailey Rd

Weather: Overcast

Sample point: tap / well / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: Solinst gas

QA/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)

Job Number: ~~A02684802~~ A0274618

Sample Code (Name): GW111.3

Date and time: 28.10.21

Coordinates (NZTM): E

N

Sampled By: MS (Clean hands)

TB (Dirty hands)

Site Photos taken? ☐ Yes ☑ No

Water use: Drinking water / Stock watering / Fodder irrigation / Non-potable

Animals observed on site: Chickens / cows / sheep / pigs / goats

Minimum volume between readings: 1 sample train volume (see formula below)

80 x 3.141 x 40.3225/4000

= 2.5L

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	0	1201	Cell	14.4	7.48	681	-121.1	1.24	5.630	2.84
During	5	1206	2.5	13.8	7.77	676	-175.6	0.19	5.640	12.2
During	12	1213	5	13.6	7.75	678	-189.6	0.12	5.640	2.31
During	19	1220	7.5	13.7	7.72	682	-196.8	0.08	5.640	2.05
During	27	1228	10	13.8	7.68	690	-202.9	0.06	5.640	1.73
During	32	1233	12.5	13.7	7.67	694	-205.5	0.05	5.640	1.71
During										
During										
During										
During										
During										

† CL=clear, CO=cloudy TU=turbid, SI=silty, SA=sandy

Comments DTW = 5.585 m below TOC

DTB = >50m

Sample Train Volume Calculation (L)
(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.
Where d = internal diameter of sample tube in **mm**

Water sample internal ø = 6mm ≈ 30mL per meter

DTW @ sample = 5.640 m, 1234.

Level logger installed @ 9.33 m b TOC
Baro logger installed immediately below TOC

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
Stabilisation criteria field sheet completed?	☐ Yes				

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Land owner:

Address:

Weather:

Sample point: tap / well / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: Low flow

QA/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)

Job Number: ~~A02684802~~ A0274419

Sample Code (Name): GW112.1

Date and time: 18/6/21 17:20

Coordinates (NZTM): E

N

Sampled By: Tim S (Clean hands)

Max S (Dirty hands)

Site Photos taken? ☐ Yes ☐ No

Water use: Drinking water / Stock watering / Fodder irrigation / Non-potable

Animals observed on site: Chickens / cows / sheep / pigs / goats

Minimum volume between readings: 1 sample train volume (see formula below)

$6 \times 3.141 \times 60.3225 / 4000$
0.19 + flow cell.

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before		17:05	Cell	13.5	6.24	376.3	76.1	1.00	1.203	200*
During		17:8	1.5	13.4	6.11	375.6	97.5	0.30	1.21	300*
During		17:11	1.5	13.3	6.09	376.4	101.7	0.21	1.21	250*
During		17:15	3	13.3	6.06	369.8	108.8	0.13	1.21	300*
During		17:25	5	13.3	6.06	368.9	107.6	0.11	1.21	250*
During		17:33	3	13.3	6.07	372.8	100.0	0.08	1.21	160*
During										
During		Sample (a)		17:35						
During										
During		Depth of	Sample		1.21					
During			0							

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Comments DTW = 1.195m @ 7.0C
DTB = 10.345m @ 10C

Sample Train Volume Calculation (L)
(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.
Where d = internal diameter of sample tube in **mm**

Water sample internal ø = 6mm ≈ 30mL per meter

Water has low staining. Level logger installed @ 3.80m

* Lots of fluctuation, reading is approx average.

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
Stabilisation criteria field sheet completed?	☐ Yes			

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Land owner:

Address: Speedy Rd

Weather: fine

Sample point: tap / well / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: Solinst double pump

QA/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)

Job Number: ~~A02684802~~ A0274619

Sample Code (Name): GW112.2

Date and time: 26/10/21

Coordinates: (NZTM) E

N

Sampled By: Mat Shaw (Clean hands)

Tim Barlow (Dirty hands)

Site Photos taken? ☐ Yes ☑ No

Water use: Drinking water / Stock watering / Fodder irrigation / Non-potable

Animals observed on site: Chickens / cows / sheep / pigs / goats

Minimum volume between readings: 1 sample train volume (see formula below)

(50m x 3.141 x 40.3225 /4000) + 0.5 = 2.08 L

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	5	17:39	2.1	14.0	6.91	862	-108.0	0.18	~~0.605~~	—
During	10	17:44	4.2	14.0	6.93	814	-110.1	0.10	0.630	1.26
During	18	17:52	6.3	13.91	6.93	810	-110.8	0.07	0.631	1.48
During	26	1800	8.4	13.8	6.92	809	-111.2	0.06	0.645	2.69
During	32	1806	10.5	13.7	6.92	808	-111.2	0.05	0.650	3.42
During	40	1814	12.6	13.6	6.92	807	-111.2	0.04	0.654	8.67
During										
During										
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Sample Train Volume Calculation (L)
(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.
Where d = internal diameter of sample tube in **mm**

Water sample internal ø = 6mm ≈ 30mL per meter

Comments

DTW = 0.605m below top of PVC

Top of pvc = 1.08m abl

Level logger installed @ 5.215m below top of casing.

DTW post-sampling: 0.610m

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

Stabilisation criteria field sheet completed? ☐ Yes

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Land owner: NZDF

Address:

Weather: cloudy, dry.

Sample point: tap / well / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment:

QA/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)

Job Number: ~~A02684802~~ A0277448

Sample Code (Name): ~~PFAS~~ GW6

Date and time: 28/10/21

Coordinates (NZTM): E

N

Sampled By: Tim B (Clean hands)

Max S (Dirty hands)

Site Photos taken? ☐ Yes ☐ No

Water use: Drinking water / Stock watering / Fodder irrigation / (Non-potable)

Animals observed on site: Chickens / cows / sheep / pigs / goats

Minimum volume between readings: 1 sample train volume (see formula below)

9 x 3.141 x 40.3225 / 4000 + 1L = 1.328.

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before		10:29	0	14.3	6.74	707	136.5	1.24	4.595	5.05
During		10:34	1.5	13.6	6.67	703	120	0.39	4.595	126.9
During		10:38	1.5	13.6	6.65	702	112.5	0.29	4.60	260
During		10:42	1.5	13.6	6.65	701	108.6	0.23	4.60	259.3
During		10:46	1.5	13.6	6.64	700	106.2	0.20	4.60	368.5
During		10:50	1.5	13.6	6.64	700	103.4	0.18	4.60	458
During										
During		Sample @	10:51		-	DTW	4.60			
During							after	Sampling.		
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Comments DTW = 4.595 m

Depth to bottom = 0.950 m

Sample Train Volume Calculation (L)
(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.
Where d = internal diameter of sample tube in **mm**

Water sample internal ø = 6mm ≈ 30mL per meter

9m of tubing used as ~~bag~~ bag + Sampling gear set up on flat surface away from well.

Water = clear.

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

Stabilisation criteria field sheet completed? ☐ Yes

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Land owner:

Address: Speedy Rd

Weather: Fine, overcast

Sample point: tap / well / surface water

Description of sample point: Tap from water tank

Distance of sample point from bore: (m)

Sampling equipment: tap

QA/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)

Job Number: ~~A02684802~~ A02744119

Sample Code (Name): GW31

Date and time: 29/10/21, 1600

Coordinates (NZTM): E

N

Sampled By: MS (Clean hands)

TB (Dirty hands)

Site Photos taken? ☐ Yes ☐ No

Water use: Drinking water / Stock watering / Fodder irrigation / Non-potable

Animals observed on site: Chickens / cows / sheep / pigs / goats

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	—	1600	—	15.0	6.4	471.0	42.7	2.26	—	4.6
During										
During										
During										
During										
During										
During										
During										
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Sample Train Volume Calculation (L)
(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.
Where d = internal diameter of sample tube in **mm**

Water sample internal ø = 6mm ≈ 30mL per meter

Comments: Sheen ~~film~~ film on water, looks white.

Sampled @ 1605

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
Stabilisation criteria field sheet completed?	☐ Yes			

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Land owner:

Address:

Weather: Cloudy, dry

Sample point: (tap) / well / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment:

QA/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)

Job Number: ~~A02684802~~ A0274611 9

Sample Code (Name): GW65

Date and time: 29/6/21 16:30

Coordinates (NZTM): E

N

Sampled By: Tim B (Clean hands)

Max S (Dirty hands)

Site Photos taken? ☑ Yes ☐ No

Water use: Drinking water / ~~Stock watering~~ / Fodder irrigation / ~~Non-potable~~

Animals observed on site: Chickens / (cows) / sheep / pigs / goats

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before		16:30	6	13.8	7.2	888	-60.3	3.85	—	0.1
During										
During										
During										
During										
During										
During										
During										
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Sample Train Volume Calculation (L)
(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.
Where d = internal diameter of sample tube in **mm**
Water sample internal ø = 6mm ≈ 30mL per meter

Comments

Slight odour on water in purge bucket during parameter measurements.

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
Stabilisation criteria field sheet completed?	☐ Yes				

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Land owner: NZDF

Address:

Weather: overcast

Sample point: tap / well / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment:

QA/QA Sample Codes:

Duplicate

Trip Blank

Field Blank

Rinsate Blank (include description of equipment cleaned e.g. dipper) ~~Dipper~~

NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)

Job Number: ~~A02684802~~ A0274411 89

Sample Code (Name): GW67 *

Date and time:

Coordinates (NZTM): E

N

Sampled By: Tim B (Clean hands)

Max S. (Dirty hands)

Site Photos taken? ☐ Yes ☐ No

Water use: Drinking water / Stock watering / Fodder irrigation / Non-potable

Animals observed on site: chickens / cows / sheep / pigs / goats

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before		17:30	8	17.5	6.67	1966	46.9	2.41	—	59
During		17:32	8	17.5	6.68	1973	49	2.70	—	31
During										
During										
During										
During										
During										
During										
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Sample Train Volume Calculation (L)
(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.
Where d = internal diameter of sample tube in **mm**

Water sample internal ø = 6mm ≈ 30mL per meter

Comments

Water had a yellow-ish tinge and foam on surface in buckets

* Stickers not complete: Sample ref OHA-ADS-GW67-271021

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

Stabilisation criteria field sheet completed? ☐ Yes

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Land owner:

Address: Taylor Rd

Weather: Overcast

Sample point: tap / (well) / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: peri pump.

QA/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)

Job Number: ~~A02684802~~ A0274411 9

Sample Code (Name): GW106

Date and time: 29/10/21

Coordinates (NZTM): E

N

Sampled By: MS (Clean hands)

TB (Dirty hands)

Site Photos taken? ☐ Yes ☒ ~~No~~

Water use: Drinking water / Stock watering / Fodder irrigation / ~~Non-potable~~

Animals observed on site: Chickens / cows / sheep / pigs / goats

Minimum volume between readings: 1 sample train volume (see formula below)

$6.5 \times 3.141 \times 40.3225/4000) + 0.5$

$= 0.7$

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	0	1029	Cell	14.1	6.31	648	131.1	1.25	2.09	261
During	3	1032	1	13.7	6.22	647	168.1	0.28	2.09	159
During	6	1035	2.2	13.7	6.20	641	174.7	0.17	2.09	224
During	9	1038	3	13.6	6.20	641	176.7	0.14	2.09	300
During	12	1041	4	13.6	6.20	639	178.2	0.12	2.09	361
During	16	1045	5.4	13.7	6.21	639	178.3	0.12	2.09	412
During	19	1048	6	13.8	6.21	638	178.3	0.11	2.09	400
During	22	1051	7	13.8	6.21	637	180.3	0.10	2.09	401
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Comments DTW = 2.08 from TOC

DTB = 6.88 from TOC

TOC = 4cm bgl

Sample Train Volume Calculation (L)
(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.
Where d = internal diameter of sample tube in **mm**

Water sample internal ø = 6mm ≈ 30mL per meter.

Water turbid, slightly milky yellow tint

Sampled @ 10:53

DTW post sample = 2.09 b TOC

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
Stabilisation criteria field sheet completed?	☐ Yes				

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Land owner:

Address:

Weather:

Sample point: tap / well / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: Low flow

QA/QA Sample Codes:

Duplicate: GWDP0

Trip Blank: GWDPM

Field Blank: GWDPN

Rinsate Blank (include description of equipment cleaned e.g. dipper): —

NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)

Job Number: ~~A02684802~~ A02744119

Sample Code (Name): GW107

Date and time: 29/10/21

Coordinates (NZTM): E

N

Sampled By: Tim B (Clean hands)

Max S. (Dirty hands)

Site Photos taken? ☐ Yes ☐ No

Water use: Drinking water / Stock watering / Fodder irrigation / Non-potable

Animals observed on site: Chickens / cows / sheep / pigs / goats _____

Minimum volume between readings: 1 sample train volume (see formula below)

$10.74 \times 3.141 \times 40.3225 / 4000$
$= 0.34L$ (plus flow cell).

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before		08:22	Cell	15	7.3	686	174.4	9.2	2.888	14.4
During		08.25	1.5	14.4	7.17	501	130.2	8.63	2.888	13.8
During		08:29	1.5	14.4	7.06	530	18.4	5.75	2.89	21.3
During		08:34	1.5	14.4	6.92	592	-46.2	0.73	2.89	37.8
During		08:38	1.5	14.4	6.92	594	-51.6	0.47	2.89	28.7
During		08:42	1.5	14.4	6.92	596	-55.9	0.32	2.89	22.1
During		08:42	1.5	14.4	6.92	597	-88.9	0.24	2.89	16.1
During										
During		Sample @ 08:42					depth to water after sampling.		= 2.89	
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Sample Train Volume Calculation (L)
(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.
Where d = internal diameter of sample tube in **mm**

Water sample internal ø = 6mm ≈ 30mL per meter

Comments: DTW = 2.885m & TOC
DTB = 10.74m & TOC
TOC = 7cm bgl
Water is clear.

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
Stabilisation criteria field sheet completed?	☐ Yes			

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Land owner:

Address: Taylor Rd

Weather: Overcast

Sample point: tap / ~~well~~ / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: low flow

QA/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)

Job Number: ~~A02684802~~ A0274411 9

Sample Code (Name): GW108

Date and time: 29/10/21 0934

Coordinates (NZTM): E

N

Sampled By: MS (Clean hands)

TB (Dirty hands)

Site Photos taken? ☐ Yes ☑ No

Water use: Drinking water / Stock watering / Fodder irrigation / ~~Non-potable~~

Animals observed on site: Chickens / cows / sheep / pigs / goats

Minimum volume between readings: 1 sample train volume (see formula below)

$(3.5 \times 3.141 \times 40.3225/4000) + 0.5$

$= 0.6$ L

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	0	0942	Cell	12.09	6.46	503	18.2	1.25	1.255	185
During	2	0944	1	12.8	6.33	504	35.5	0.45	1.28	110
During	6	0948	2	12.8	6.29	501	41.4	0.29	1.30	33.4
During	9	0951	3	12.7	6.25	498.4	47	0.21	1.325	29.7
During	13	0954	4	12.8	6.23	495.3	51.6	0.18	1.34	20.00
During	16	0958	5	12.8	6.23	493.9	54	0.17	1.33	17.0
During	18	1000	6	12.8	6.21	492	56.6	0.15	1.34	12.12
During										
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Sample Train Volume Calculation (L)
(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.
Where d = internal diameter of sample tube in **mm**

Water sample internal ø = 6mm ≈ 30mL per meter

Comments DTW = 1.18 from TOC

DTB = 3.88m from TOC

TOC ~~ground level~~ = 5cm ~~above~~ bgl

~~Water~~ water observed as turbid, yellowy-red tinge

Sampled @ 1002, DTW = 1.31 m

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
Stabilisation criteria field sheet completed?	☐ Yes				

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Land owner:

Address:

Weather: Sunny, dry Warm

Sample point: tap (well) surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: Low flow

QA/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)

Job Number: ~~A02684802~~ A0274411(9

Sample Code (Name): GW109

Date and time:

Coordinates: (NZTM) E

N

Sampled By: Tim B (Clean hands)

Mark S (Dirty hands)

Site Photos taken? ☑ Yes ☐ No

Water use: Drinking water / Stock watering / Fodder irrigation / Non-potable

Animals observed on site: Chickens / cows / sheep / pigs / goats _____

Minimum volume between readings: 1 sample train volume (see formula below)

$7.83 \times 3.141 \times 40.3225 / 4000$
$= 0.25$ + flow cell

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before		13:43	cell	15.2	6.26	352.2	187.4	0.95	4.01	75.9
During		13:49	1.25	14.9	6.14	349.8	205.3	0.31	4.01	41.7
During		13:53	1.25	14.7	6.12	349.8	213.8	0.20	4.01	66.6
During		13:58	1.25	15	6.11	351.2	216.1	0.16	4.01	89.2
During		14:03	1.25	15	6.10	351.7	218.1	0.14	4.01	117.2
During		14:07	1.25	15.1	6.10	351.8	217.8	0.13	4.01	145.9
During		14:13	1.25	15	6.10	351.6	216.4	0.11	4.01	162.5
During										
During		Sample @ 14:15								
During										
During		DTW after Sample = 4.01								

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Comments: DTW = 4.001 m BTOC
DTB = 7.83 m BTOC
TOC = 6cm bgl

Sample Train Volume Calculation (L)
(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.
Where d = internal diameter of sample tube in **mm**

Water sample internal ø = 6mm ≈ 30mL per meter

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
Stabilisation criteria field sheet completed?	☐ Yes				

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Land owner:

Address: Bailey Rd

Weather: Overcast

Sample point: tap / well / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: Top

QA/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)

Job Number: ~~A02684802~~ A0274411 8

Sample Code (Name): WS1

Date and time: 27/10/21, 1640

Coordinates (NZTM): E

N

Sampled By: MS (Clean hands)

TB (Dirty hands)

Site Photos taken? ☐ Yes ☒ No

Water use: Drinking water / ~~Stock watering~~ / Fodder irrigation / Non-potable

Animals observed on site: Chickens / cows / sheep / pigs / goats

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	2	1640	~5	16.5	7.39	380.8	175.1	9.00	—	55.80
During	4	1642	~5	16.3	7.44	380.8	172.7	9.16	—	30.51
During										
During										
During										
During										
During										
During										
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Sample Train Volume Calculation (L)
(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.
Where d = internal diameter of sample tube in **mm**

Water sample internal ø = 6mm ≈ 30mL per meter

Comments

First bucket: [redacted] brown, turbid.
Second " : light brown, turbid

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
Stabilisation criteria field sheet completed?	☐ Yes				

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Land owner:

Address: Bulls Quarry

Weather: Overcast

Sample point: (tap) / well / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: Tap

QA/QA Sample Codes:

Duplicate —

Trip Blank —

Field Blank —

Rinsate Blank (include description of equipment cleaned e.g. dipper) GWDPL

NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)

Job Number: ~~A02684802~~ A2744118

Sample Code (Name): WS2

Date and time: 28/10/21, 0925

Coordinates (NZTM): E

N

Sampled By: TB (Clean hands)

MS (Dirty hands)

Site Photos taken? ☐ Yes ☑ No

Water use: Drinking water / Stock watering / Fodder irrigation / Non-potable

Animals observed on site: Chickens / cows / sheep / pigs / goats

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before		09:40	8	14.2	6.59	4692	3.4	2.70	—	0.13
During		09:43	8	13.9	6.48	4689.7	23.4	1.71	—	-0.13
During										
During										
During										
During										
During										
During										
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Comments Gregg (Spotless) provided across / MaxTerr

Sample taken 0940

Sample Train Volume Calculation (L)
(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.
Where **d** = internal diameter of sample tube in **mm**

Water sample internal ø = 6mm ≈ 30mL per meter

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
Stabilisation criteria field sheet completed?	☐ Yes				

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Land owner:

Address: Access off Forge Rd via Tarmac track

Weather: Overcast

Sample point: tap / well / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: Mighty gripper

QA/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)

Job Number: ~~A02684802~~ A0276616 8

Sample Code (Name): SW4

Date and time: 27/10/21 ; 15:47

Coordinates: (NZTM) E

N

Sampled By: MS (Clean hands)

TB (Dirty hands)

Site Photos taken? ☐ Yes ☑ No

Water use: Drinking water / Stock watering / Fodder irrigation / ~~Non-potable~~

Animals observed on site: Chickens / cows / sheep / pigs / goats

Minimum volume between readings: 1 sample train volume (see formula below)

n/a

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before	–	1547	–	15.7	6.73	436.7	133.7	2.47	–	~~Rom~~ 6.7
During										
During										
During										
During										
During										
During										
During										
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Comments: Strong dark brown, turbid, no water flow and) discernable.

Sample Train Volume Calculation (L)
(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.
Where d = internal diameter of sample tube in **mm**

Water sample internal ø = 6mm ≈ 30mL per meter

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
Stabilisation criteria field sheet completed?	☐ Yes				

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Land owner:

Address:

Weather: Warm + dry

Sample point: tap / well / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: Mighty Gripper / Transfer bottle.

QA/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)

Job Number: ~~A02684802~~ A0276411 9

Sample Code (Name): SW6

Date and time: 29/10/21 14:40

Coordinates (NZTM): E

N

Sampled By: Tim S (Clean hands)

Mark S (Dirty hands)

Site Photos taken? ☑ Yes ☐ No

Water use: Drinking water / Stock watering / Fodder irrigation / Non-potable

Animals observed on site: Chickens / cows / sheep / pigs / goats _____

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before		14:40	—	20.9	6.85	188.2	168.8	5.15	—	14.25
During										
During										
During										
During										
During										
During										
During										
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Comments

Sample Train Volume Calculation (L)
(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.
Where d = internal diameter of sample tube in **mm**

Water sample internal ø = 6mm ≈ 30mL per meter

approx 10cm water in channel.
Yellow/orange tinge to water.

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
Stabilisation criteria field sheet completed?	☐ Yes				

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: ~~Ohakea~~ / Woodbourne (circle as appropriate)

Land owner:

Address: Taylor Rd

Weather: Fine/cloudy

Sample point: tap / well / ~~surface water~~

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: mighty gripper

QA/QA Sample Codes:

Duplicate —

Trip Blank —

Field Blank —

Rinsate Blank (include description of equipment cleaned e.g. dipper) SWDPG - Mighty Gripper

NOTE: purge until well has stabilised using field parameters below (3 consecutive readings)

Job Number: ~~A02684802~~ A0274119

Sample Code (Name): SW33

Date and time: 29/10/21 11:20

Coordinates (NZTM): E

N

Sampled By: Tim B (Clean hands)

Max S (Dirty hands)

Site Photos taken? ☐ Yes ☒ No

Water use: Drinking water / Stock watering / Fodder irrigation / Non-potable

Animals observed on site: Chickens / cows / sheep / pigs / goats

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before		11:30	—	17.1	7.46	405.4	81.1	10.36	—	3.35
During										
During										
During										
During										
During										
During										
During										
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Sample Train Volume Calculation (L)
(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.
Where d = internal diameter of sample tube in **mm**

Water sample internal ø = 6mm ≈ 30mL per meter

Comments

Water is clear and good flowing. Sampled @ 11:30

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
Stabilisation criteria field sheet completed?	☐ Yes				

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Land owner: Rangitikei Quarry

Address:

Weather: ~~Clear~~ cloudy, dry

Sample point: tap / well / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment:

QA/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)

Job Number: ~~A02684802~~ A02744119

Sample Code (Name): ~~QA2~~ SW36

Date and time: 29/6/22 16:50

Coordinates: (NZTM) E

N

Sampled By: Tim B (Clean hands)

Max S. (Dirty hands)

Site Photos taken? ☑ Yes ☐ No

Water use: Drinking water / Stock watering / Fodder irrigation / Non-potable

Animals observed on site: Chickens / cows / sheep / pigs / goats _____

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC (µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before		16:50	—	17.3	7.31	686	117	6.34	—	3.56
During										
During										
During										
During										
During										
During										
During										
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Comments

Sample Train Volume Calculation (L)
(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.
Where d = internal diameter of sample tube in **mm**

Water sample internal ø = 6mm ≈ 30mL per meter

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

Stabilisation criteria field sheet completed? ☐ Yes

* = needs to be recorded each time you take a set of parameters

NZDF PFAS SAMPLING FORM (separate form for each primary sample)

Location: Ohakea / Woodbourne (circle as appropriate)

Land owner: Dorley

Address:

Weather: cloudy, dry

Sample point: tap / well / surface water

Description of sample point: Artesian.

Distance of sample point from bore: (m)

Sampling equipment: transfer bottle

QA/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)

Job Number: ~~A02684802~~ A0276411 9

Sample Code (Name): GW53

Date and time: 29/10/21 15:20

Coordinates (NZTM): E

N

Sampled By: Tim S (Clean hands)

Max S (Dirty hands)

Site Photos taken? ☑ Yes ☐ No

Water use: Drinking water / Stock watering / Fodder irrigation / Non-potable

Animals observed on site: Chickens / cows / sheep / pigs / goats _____

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 Elapsed	Time	Volume Removed (L)	Water Temp. (°C)	pH	EC ((µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Water Level (m)*	Turbidity (NTU) / Water Appearance†
Before		15:20	6.5	13.8	6.8	649	-19.9	2.97	—	0.75
During										
During										
During										
During										
During										
During										
During										
During										
During										
During										

† CL=clear, CO=cloudy, TU=turbid, SI=silty, SA=sandy

Comments

Sample Train Volume Calculation (L)
(length of sample tube x 3.141 x d^2 / 4000) + flow through cell volume.
Where d = internal diameter of sample tube in **mm**
Water sample internal ø = 6mm ≈ 30mL per meter

Rust residue on pipe and around cap.

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

Stabilisation criteria field sheet completed? ☐ Yes

* = needs to be recorded each time you take a set of parameters

Appendix D: QAQC Results

Table D-1: QA/QC Water Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) [1] Intra-lab Duplicates

Sample Location	MW6	MW6	%RPD (MW6 and GWDPJ)	MW9	MW9	%RPD (MW9 and GWDPH)	GW107	GW107	%RPD (GW107 and GWDPO)
Sample Name	OHA_RUP_MW6_8_271021	OHA_ADJ_GWDPJ_1_271021		OHA_DTK_MW9_7_271021	OHA_ADJ_GWDPH_1_271021		OHA_ADJ_GW107_3_291021	OHA_ADJ_GWDPO_1_291021	
Laboratory Reference	2590573	2590573		2590573	2590573		2590579	2590579	
Monitoring Zone	On base	On base		On base	On base		Off base	Off base	
Sampled Date	27/10/2021	27/10/2021		27/10/2021	27/10/2021		29/10/2021	29/10/2021	
PFPrS	0.1	0.1	0	<0.025	<0.025	0	<0.001	<0.001	0
PFBS	0.33	0.32	3	0.046	0.048	4	<0.001	<0.001	0
PFPeS	0.38	0.38	0	0.057	0.056	2	<0.001	<0.001	0
di-PFHxS	<0.025	<0.025	0	<0.025	<0.025	0	<0.001	<0.001	0
Mono-PFHxS	0.77	0.74	4	0.1	0.11	10	<0.001	<0.001	0
L-PFHxS	5.7	5.5	4	0.79	0.77	3	<0.001	<0.001	0
Total PFHxS	6.5	6.2	5	0.89	0.88	1	<0.001	<0.001	0
PFHpS	0.24	0.25	4	0.029	<0.025	15	<0.001	<0.001	0
di-PFOS	0.18	0.21	15	0.042	0.03	33	<0.001	<0.001	0
Mono-PFOS	2.7	2.8	4	0.46	0.42	9	<0.001	<0.001	0
L-PFOS	4.6	4.7	2	0.53	0.4	28	<0.001	<0.001	0
Total PFOS	7.5	7.7	3	1	0.85	16	<0.001	<0.001	0
Sum of PFHxS and PFOS	14	14	0	1.9	1.7	11	<0.001	<0.001	0
PFECHS	<0.025	<0.025	0	<0.025	<0.025	0	<0.001	<0.001	0
PFBA	0.57	0.55	4	0.52	0.52	0	<0.001	<0.001	0
PFPeA	1.7	1.8	6	2	2	0	<0.001	<0.001	0
PFHxA	1.6	1.6	0	1	1.1	10	<0.001	<0.001	0
PFHpA	0.69	0.69	0	0.49	0.51	4	<0.001	<0.001	0
PFOA	0.97	0.96	1	0.47	0.44	7	<0.001	<0.001	0
PFNA	0.61	0.56	9	0.26	0.24	8	<0.001	<0.001	0
PFDA	<0.025	<0.025	0	<0.025	<0.025	0	<0.001	<0.001	0
PFUnDA	<0.025	<0.025	0	<0.025	<0.025	0	<0.001	<0.001	0
PFTrDA	<0.1	<0.1	0	<0.1	<0.1	0	<0.001	<0.001	0
PFTeDA	<0.1	<0.1	0	<0.1	<0.1	0	-	<0.001	-
PFDoDA	<0.1	<0.1	0	<0.1	<0.1	0	<0.001	<0.001	0
FOSA	<0.025	<0.025	0	<0.025	<0.025	0	<0.001	<0.001	0
MeFOSA	<0.1	<0.1	0	<0.1	<0.1	0	<0.001	<0.001	0
MeFOSAA	<0.025	<0.025	0	<0.025	<0.025	0	<0.001	<0.001	0
EtFOSAA	<0.025	<0.025	0	<0.025	<0.025	0	<0.001	<0.001	0
4:2 FTS	<0.025	<0.025	0	<0.025	<0.025	0	<0.001	<0.001	0
6:2 FTS	<1	<1	0	2.3	2.3	0	<0.001	<0.001	0
8:2 FTS	<0.1	<0.1	0	<0.1	<0.1	0	<0.001	<0.001	0
10:2 FTS	<0.025	<0.025	0	<0.025	<0.025	0	<0.001	<0.001	0
FPrPA	<0.1	<0.1	0	<0.1	<0.1	0	<0.001	<0.001	0
EtFOSA	<0.1	<0.1	0	<0.1	<0.1	0	<0.001	<0.001	0
EtFOSE	<0.1	<0.1	0	<0.1	<0.1	0	<0.001	<0.001	0
FPePA	<0.025	<0.025	0	<0.025	<0.025	0	<0.001	<0.001	0
FHpPA	<0.025	<0.025	0	<0.025	<0.025	0	<0.001	<0.001	0
F-53B minor	<0.05	<0.05	0	<0.05	<0.05	0	<0.001	<0.001	0
HFPO-DA*	<0.05	<0.05	0	<0.05	<0.05	0	<0.001	<0.001	0
Sum F-53B	<0.1	<0.1	0	<0.1	<0.1	0	<0.001	<0.001	0
ADONA	<0.025	<0.025	0	<0.025	<0.025	0	<0.001	<0.001	0
P37DMOA	<0.05	<0.05	0	<0.05	<0.05	0	<0.001	<0.001	0
F-53B major	<0.1	<0.1	0	<0.1	<0.1	0	<0.001	<0.001	0

Notes:

1. Results in µg/L.

-	No value available
<0.001	Below the limit of reporting

ESDAT QA Checker
Project:OHA_PFAS
Site:All
Filter: SDG in('A02744118')

Overview Summary
- Count of Samples
- Count of Results

Holding Times

Blanks
- Field Blanks
- Detects in Lab Blanks (0)

Duplicates
- Field and Interlab Duplicates
- Lab Duplicates with high RPDs (0)

Lab Control Samples
- SDG's without a Laboratory Control Sample (0)
- Laboratory Control Samples, Error > 25% (0)

Certified and Standard Reference Materials
- Certified Reference Materials - Error > 25% (0)

Matrix Spikes
- Trip Spikes with invalid Control Sample (0)
- Matrix Spike Recoveries outside lab LCL or UCL (0)

Inorganic

Other
- OriginalChemNames Requiring Validation (0)
- Samples with no Results (0)

Appendix E: Sample Results Tables

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) [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			
Location	MW4	MW4	MW4	MW4	MW4	MW4	MW4			
Sample Date	9/07/2015	1/08/2017	31/10/2017	5/07/2018	30/09/2020	19/03/2021	27/10/2021			
Lab Report Number	ES1526105	841470	937355	1186580	2132127	2314824	2590573			
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base	Interim Guidance Level for Drinking Water, MoH 2017 [2]	ANZECC 90% Species Protection - Technical Draft Default Guideline Values [3]	ANZECC 95% Species Protection - Technical Draft Default Guideline Values [3]
Sample Results										
PFPrS	-	0.0072	0.011	0.011	<0.025	<0.025	<0.025	-	-	-
PFBS	0.05	0.032	0.043	0.034	0.025	0.034	0.033	-	-	-
PFPeS	-	0.022	0.065	0.051	0.029	0.046	0.048	-	-	-
di-PFHxS	-	<0.001	0.0017	0.0011	<0.025	<0.025	<0.025	-	-	-
Mono-PFHxS	-	0.1	0.14	0.081	0.061	0.083	0.091	-	-	-
L-PFHxS	-	0.54	0.76	0.49	0.35	0.46	0.6	-	-	-
Total PFHxS[4]	1.35	0.64	0.9	0.57	0.41	0.54	0.69	-	-	-
PFHpS	-	0.032	0.059	0.032	<0.025	<0.025	<0.025	-	-	-
di-PFOS	-	0.025	0.066	0.027	<0.025	0.029	0.032	-	-	-
Mono-PFOS	-	0.45	1.1	0.5	0.33	0.46	0.68	-	-	-
L-PFOS	-	1	2.1	1	0.69	0.91	1.2	-	-	-
Total PFOS[4]	**3.02**	1.5	3.3	1.5	1	1.4	1.9	-	2	0.13
Sum of PFHxS and PFOS[5]	-	-	-	2.1	1.4	1.9	2.6	0.07	-	-
PFECHS	-	-	-	-	-	<0.025	<0.025	-	-	-
PFBA	-	0.21	0.29	0.2	0.17	0.17	0.27	-	-	-
PFPeA	-	1	1.7	1	0.65	0.79	1.1	-	-	-
PFHxA	2.09	0.99	0.96	0.74	0.41	0.51	0.73	-	-	-
PFHpA	0.71	0.34	0.43	0.32	0.22	0.26	0.37	-	-	-
PFOA	0.54	0.26	0.48	0.3	0.19	0.25	0.38	0.56	632	220
PFNA	0.32	0.16	0.35	0.18	0.1	0.13	0.24	-	-	-
PFDA	-	0.0021	0.0053	0.0048	<0.025	<0.025	<0.025	-	-	-
PFUnDA	<0.05	<0.005	0.003	-	<0.025	<0.025	<0.025	-	-	-
PFTrDA	<0.05	-	-	-	<0.1	<0.1	<0.1	-	-	-
PFTeDA	<0.5	-	-	-	<0.1	<0.1	<0.1	-	-	-
PFDoDA	<0.05	<0.005	<0.001	-	<0.1	<0.1	<0.1	-	-	-
FOSA	<0.02	<0.001	0.0032	0.004	<0.025	<0.025	<0.025	-	-	-
MeFOSA	<0.5	<0.005	<0.005	-	<0.1	<0.1	<0.1	-	-	-
MeFOSAA	-	<0.005	<0.005	-	<0.025	<0.025	<0.025	-	-	-
EtFOSAA	-	<0.005	<0.005	-	<0.025	<0.025	<0.025	-	-	-
4:2 FTS	-	<0.005	0.0054	0.0031	<0.025	<0.025	<0.025	-	-	-
6:2 FTS	5.6	0.88	1.6	0.86	0.45	0.45	1.1	-	-	-
8:2 FTS	<0.1	0.036	0.077	0.066	<0.1	<0.1	<0.1	-	-	-
10:2 FTS	-	-	-	-	-	<0.025	<0.025	-	-	-
FPrPA	-	-	-	-	-	<0.1	<0.1	-	-	-
EtFOSA	<0.05	<0.005	<0.005	-	<0.1	<0.1	<0.1	-	-	-
EtFOSE	<0.5	<0.005	<0.005	-	<0.1	<0.1	<0.1	-	-	-
FPePA	-	-	-	-	-	<0.025	<0.025	-	-	-
FHpPA	-	-	-	-	-	<0.025	<0.025	-	-	-
F-53B minor	-	-	-	-	-	<0.05	<0.05	-	-	-
HFPO-DA*	-	-	-	-	-	<0.05	<0.05	-	-	-
Sum F-53B	-	-	-	-	-	<0.1	<0.1	-	-	-
ADONA	-	-	-	-	-	<0.025	<0.025	-	-	-
P37DMOA	-	-	-	-	-	<0.05	<0.05	-	-	-
F-53B major	-		-	-	-	<0.1	<0.1	-	-	-

Notes:

1. Results in µg/L.
2. Ministry of Health (MoH, 2017) Interim Guidance Level for Drinking Water, PFOA, PFOS and PFHxS.
3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan – 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. Sample is the retention portion

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 95% ecological guidelines.
1.2	Concentration exceeds 90% ecological guidelines.
3.6	Concentration exceeds interim drinking water guidelines

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) [1]

	PFAS in Groundwater							Guidelines		
Sample Name	MW6	MW6	MW6	OHA_MW6	MW6	OHA_RUP_MW6_6_300920	OHA_RUP_MW6_7_170321			
Location	MW6	MW6	MW6	MW6	MW6	MW6	MW6			
Sample Date	20/04/2017	1/08/2017	31/10/2017	22/02/2018	4/07/2018	30/09/2020	17/03/2021			
Lab Report Number	1327497	841470	937355	1055089	1186580	2132127	2314824			
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base			
Sample Results								Interim Guidance Level for Drinking Water, MoH 2017 [2]	ANZECC 90% Species Protection - Technical Draft Default Guideline Values [3]	ANZECC 95% Species Protection - Technical Draft Default Guideline Values [3]
PFPrS	0.11	0.21	0.66	0.17	0.22	0.063	0.028	-	-	-
PFBS	0.56	0.76	1.8	0.43	0.72	0.22	0.11	-	-	-
PFPeS	0.81	0.81	2.3	0.66	0.77	0.26	0.12	-	-	-
di-PFHxS	0.014	0.02	0.052	0.025	0.015	<0.025	<0.025	-	-	-
Mono-PFHxS	1.1	1.9	4.1	1.8	1.7	0.62	0.25	-	-	-
L-PFHxS	5.3	8.1	22	4.1	11	4.2	1.6	-	-	-
Total PFHxS[4]	6.4	10	26	5.9	13	4.8	1.8	-	-	-
PFHpS	0.34	0.6	0.49	0.38	0.34	0.15	0.06	-	-	-
di-PFOS	0.31	0.23	0.27	0.39	0.27	0.13	0.075	-	-	-
Mono-PFOS	4.9	2.8	2.4	3.3	4.5	2.9	1.1	-	-	-
L-PFOS	6.6	5.9	3	4.5	9.7	6.5	1.7	-	-	-
Total PFOS[4]	**12**	8.9	**5.7**	**8.2**	**14**	**9.5**	**2.9**	-	2	0.13
Sum of PFHxS and PFOS[5]	18	-	-	14	27	14	4.7	0.07	-	-
PFECHS	-	-	-	-	-	-	<0.025	-	-	-
PFBA	1.1	1.1	1.3	0.66	1.2	1.4	0.35	-	-	-
PFPeA	3.6	4	6.8	2.5	4.1	3.2	1.1	-	-	-
PFHxA	2.8	4.4	7	2	4	2.2	0.78	-	-	-
PFHpA	0.9	1.5	2.5	0.93	1.9	1	0.37	-	-	-
PFOA	1.3	1.8	1.7	0.89	2.2	1.1	0.35	0.56	632	220
PFNA	0.75	0.86	0.37	0.66	1.3	0.75	0.28	-	-	-
PFDA	0.016	0.029	0.013	0.012	0.045	<0.025	<0.025	-	-	-
PFUnDA	-	0.0057	0.0043	<0.005	-	<0.025	<0.025	-	-	-
PFTrDA	-	-	-	-	-	<0.1	<0.1	-	-	-
PFTeDA	-	-	-	-	-	<0.1	<0.1	-	-	-
PFDoDA	-	<0.005	<0.001	-	-	<0.1	<0.1	-	-	-
FOSA	0.0014	<0.001	<0.001	0.0085	<0.001	<0.025	<0.025	-	-	-
MeFOSA	-	<0.005	<0.005	-	-	<0.1	<0.1	-	-	-
MeFOSAA	-	<0.005	<0.005	<0.005	-	<0.025	<0.025	-	-	-
EtFOSAA	-	<0.005	<0.005	<0.005	-	<0.025	<0.025	-	-	-
4:2 FTS	<0.001	<0.005	<0.005	<0.005	<0.001	<0.025	<0.025	-	-	-
6:2 FTS	0.53	0.74	0.33	1.7	0.46	0.23	0.84	-	-	-
8:2 FTS	0.0089	0.0064	<0.005	0.04	0.0069	<0.1	<0.1	-	-	-
10:2 FTS	-	-	-	-	-	-	<0.025	-	-	-
FPrPA	-	-	-	-	-	-	<0.1	-	-	-
EtFOSA	-	<0.005	<0.005	-	-	<0.1	<0.1	-	-	-
EtFOSE	-	<0.005	<0.005	<0.025	-	<0.1	<0.1	-	-	-
FPePA	-	-	-	-	-	-	<0.025	-	-	-
FHpPA	-	-	-	-	-	-	<0.025	-	-	-
F-53B minor	-	-	-	-	-	-	<0.05	-	-	-
HFPO-DA*	-	-	-	-	-	-	<0.05	-	-	-
Sum F-53B	-	-	-	-	-	-	<0.1	-	-	-
ADONA	-	-	-	-	-	-	<0.025	-	-	-
P37DMOA	-	-	-	-	-	-	<0.05	-	-	-
F-53B major	-	-	-	-	-	-	<0.1	-	-	-

Notes:

1. Results in µg/L.
2. Ministry of Health (MoH, 2017) Interim Guidance Level for Drinking Water, PFOA, PFOS and PFHxS.
3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan – 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. Sample is the retention portion

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 95% ecological guidelines.
1.2	Concentration exceeds 90% ecological guidelines.
3.6	Concentration exceeds interim drinking water guidelines

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) [1]

	PFAS in Groundwater							Guidelines		
Sample Name	OHA_RUP_MW6_8_271021	OHA_BAI_GW111.1_1_170321	OHA_BAI_GW111.1_2_281021	OHA_BAI_GW111.2_1_040221	OHA_BAI_GW111.2_2_170321	OHA_BAI_GW111.2_3_281021	OHA_BAI_GW111.3_1_170321			
Location	MW6	GW111.1	GW111.1	GW111.2	GW111.2	GW111.2	GW111.3			
Sample Date	27/10/2021	17/03/2021	28/10/2021	4/02/2021	17/03/2021	28/10/2021	17/03/2021			
Lab Report Number	2590573	2390370	2593741	2256089	2390370	2593741	2390370			
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base			
Sample Results								Interim Guidance Level for Drinking Water, MoH 2017 [2]	ANZECC 90% Species Protection - Technical Draft Default Guideline Values [3]	ANZECC 95% Species Protection - Technical Draft Default Guideline Values [3]
PFPrS	0.1	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBS	0.33	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-
PFPeS	0.38	<0.025	<0.025	<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	0.77	<0.025	0.032	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	5.7	0.083	0.2	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFHxS[4]	6.5	0.083	0.23	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpS	0.24	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFOS	0.18	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	2.7	0.035	0.15	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFOS	4.6	0.05	0.21	<0.001	<0.001	0.0012	<0.001	-	-	-
Total PFOS[4]	**7.5**	0.085	0.36	<0.001	<0.001	0.0012	<0.001	-	2	0.13
Sum of PFHxS and PFOS[5]	14	0.17	0.59	<0.001	<0.001	0.0012	<0.001	0.07	-	-
PFECHS	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBA	0.57	0.11	0.15	<0.001	<0.001	<0.001	<0.001	-	-	-
PFPeA	1.7	0.39	0.86	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHxA	1.6	0.28	0.47	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpA	0.69	0.15	0.17	<0.001	<0.001	<0.001	<0.001	-	-	-
PFOA	0.97	0.073	0.13	<0.001	<0.001	<0.001	<0.001	0.56	632	220
PFNA	0.61	<0.025	0.048	<0.001	<0.001	<0.001	<0.001	-	-	-
PFDA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-
PFUnDA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-
PFTrDA	<0.1	<0.1	<0.1	-	-	-	-	-	-	-
PFTeDA	<0.1	<0.1	<0.1	-	-	-	-	-	-	-
PFDoDA	<0.1	<0.1	<0.1	<0.001	-	<0.001	<0.001	-	-	-
FOSA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.1	<0.1	<0.1	<0.001	-	<0.001	-	-	-	-
MeFOSAA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	<0.025	<0.025	<0.025	-	<0.001	<0.001	<0.001	-	-	-
6:2 FTS	<1	<0.05	0.15	<0.001	<0.001	0.0024	<0.001	-	-	-
8:2 FTS	<0.1	<0.1	<0.1	<0.001	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	<0.025	<0.025	<0.025	<0.001	-	<0.001	-	-	-	-
FPrPA	<0.1	<0.1	<0.1	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSA	<0.1	<0.1	<0.1	<0.001	-	<0.001	-	-	-	-
EtFOSE	<0.1	<0.1	<0.1	<0.001	-	<0.001	-	-	-	-
FPePA	<0.025	<0.025	<0.025	<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	<0.05	<0.05	<0.001	<0.001	<0.001	<0.001	-	-	-
HFPO-DA*	<0.05	<0.05	<0.05	<0.001	<0.001	<0.001	<0.001	-	-	-
Sum F-53B	<0.1	<0.1	<0.1	<0.001	<0.001	<0.001	<0.001	-	-	-
ADONA	<0.025	<0.025	<0.025	<0.001	<0.001	<0.001	<0.001	-	-	-
P37DMOA	<0.05	<0.05	<0.05	<0.001	<0.001	<0.001	<0.001	-	-	-
F-53B major	<0.1	<0.1	<0.1	<0.001	<0.001	<0.001	<0.001	-	-	-

Notes:

1. Results in µg/L.
2. Ministry of Health (MoH, 2017) Interim Guidance Level for Drinking Water, PFOA, PFOS and PFHxS.
3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan – 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. Sample is the retention portion

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 95% ecological guidelines.
1.2	Concentration exceeds 90% ecological guidelines.
3.6	Concentration exceeds interim drinking water guidelines

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) [1]

	PFAS in Groundwater							Guidelines		
Sample Name	OHA_BAI_GW111.3_2_281021	MW9	MW9	OHA_MW9	MW9	OHA_DTK_MW9_5_300920	OHA_DTK_MW9_6_180321			
Location	GW111.3	MW9	MW9	MW9	MW9	MW9	MW9			
Sample Date	28/10/2021	20/04/2017	1/11/2017	20/02/2018	4/07/2018	30/09/2020	18/03/2021			
Lab Report Number	2593741	1327497	937355	1055089	1186581	2132127	2314824			
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base			
Sample Results								Interim Guidance Level for Drinking Water, MoH 2017 [2]	ANZECC 90% Species Protection - Technical Draft Default Guideline Values [3]	ANZECC 95% Species Protection - Technical Draft Default Guideline Values [3]
PFPrS	<0.001	0.019	0.018	0.031	0.0091	<0.025	<0.025	-	-	-
PFBS	<0.001	0.12	0.072	0.093	0.028	0.034	0.064	-	-	-
PFPeS	<0.001	0.16	0.11	0.14	0.043	0.038	0.069	-	-	-
di-PFHxS	<0.001	0.003	0.0025	0.003	<0.001	<0.025	<0.025	-	-	-
Mono-PFHxS	<0.001	0.21	0.16	0.26	0.058	0.071	0.14	-	-	-
L-PFHxS	<0.001	1.5	1.1	1.3	0.42	0.47	0.91	-	-	-
Total PFHxS[4]	<0.001	1.7	1.3	1.6	0.48	0.54	1	-	-	-
PFHpS	<0.001	0.072	0.06	0.071	0.021	<0.025	0.034	-	-	-
di-PFOS	<0.001	0.055	0.057	0.078	0.013	<0.025	0.045	-	-	-
Mono-PFOS	<0.001	0.62	0.46	0.72	0.18	0.19	0.52	-	-	-
L-PFOS	0.0021	0.52	0.31	0.58	0.19	0.24	0.46	-	-	-
Total PFOS[4]	0.0021	1.2	0.83	1.4	0.38	0.43	1	-	2	0.13
Sum of PFHxS and PFOS[5]	0.0021	2.9	-	3	0.86	0.97	2	0.07	-	-
PFECHS	<0.001	-	-	-	-	-	<0.025	-	-	-
PFBA	<0.001	0.69	0.57	0.54	0.45	0.57	0.51	-	-	-
PFPeA	<0.001	3.5	2.9	2.6	1.7	2.1	2.3	-	-	-
PFHxA	<0.001	1.8	1.5	1.5	0.92	1	1.3	-	-	-
PFHpA	<0.001	1	0.57	0.68	0.44	0.43	0.56	-	-	-
PFOA	<0.001	0.67	0.52	0.67	0.36	0.33	0.48	0.56	632	220
PFNA	<0.001	0.36	0.34	0.41	0.23	0.13	0.26	-	-	-
PFDA	<0.001	0.0014	<0.001	<0.001	0.0011	<0.025	<0.025	-	-	-
PFUnDA	<0.001	-	<0.001	<0.005	<0.001	<0.025	<0.025	-	-	-
PFTrDA	-	-	-	-	<0.025	<0.1	<0.1	-	-	-
PFTeDA	<0.001	-	-	-	<0.1	<0.1	<0.1	-	-	-
PFDoDA	<0.001	-	<0.001	-	<0.025	<0.1	<0.1	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.025	-	-	-
MeFOSA	<0.001	-	<0.005	-	<0.005	<0.1	<0.1	-	-	-
MeFOSAA	<0.001	-	<0.005	<0.005	<0.001	<0.025	<0.025	-	-	-
EtFOSAA	<0.001	-	<0.005	<0.005	<0.001	<0.025	<0.025	-	-	-
4:2 FTS	<0.001	0.012	0.0095	0.011	0.004	<0.025	<0.025	-	-	-
6:2 FTS	0.0037	1.9	3.6	1.7	1.5	1.1	3.2	-	-	-
8:2 FTS	<0.001	0.0035	<0.005	<0.005	0.0022	<0.1	<0.1	-	-	-
10:2 FTS	<0.001	-	-	-	-	-	<0.025	-	-	-
FPrPA	<0.001	-	-	-	-	-	<0.1	-	-	-
EtFOSA	<0.001	-	<0.005	-	<0.005	<0.1	<0.1	-	-	-
EtFOSE	<0.001	-	<0.005	<0.025	<0.005	<0.1	<0.1	-	-	-
FPePA	<0.001	-	-	-	-	-	<0.025	-	-	-
FHpPA	<0.001	-	-	-	-	-	<0.025	-	-	-
F-53B minor	<0.001	-	-	-	-	-	<0.05	-	-	-
HFPO-DA*	<0.001	-	-	-	-	-	<0.05	-	-	-
Sum F-53B	<0.001	-	-	-	-	-	<0.1	-	-	-
ADONA	<0.001	-	-	-	-	-	<0.025	-	-	-
P37DMOA	<0.001	-	-	-	-	-	<0.05	-	-	-
F-53B major	<0.001	-	-	-	-	-	<0.1	-	-	-

Notes:

1. Results in µg/L.
2. Ministry of Health (MoH, 2017) Interim Guidance Level for Drinking Water, PFOA, PFOS and PFHxS.
3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan – 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. Sample is the retention portion

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 95% ecological guidelines.
1.2	Concentration exceeds 90% ecological guidelines.
3.6	Concentration exceeds interim drinking water guidelines

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) [1]

	PFAS in Groundwater							Guidelines		
Sample Name	OHA_DTK_MW9_7_271021	OHA_WS1	WS01	WS1	OHA_FTA_WS1_4_290920	OHA_FTA_WS1_5_170321	OHA_FTA_WS1_6_271021			
Location	MW0	WS1	WS1	WS1	WS1	WS1	WS1			
Sample Date	27/10/2021	19/02/2018	3/07/2018	21/07/2018	29/09/2020	17/03/2021	27/10/2021			
Lab Report Number	2590573	1055089	1186578	1326866	2096316	2318531	2590573			
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base			
Sample Results								Interim Guidance Level for Drinking Water, MoH 2017 [2]	ANZECC 90% Species Protection - Technical Draft Default Guideline Values [3]	ANZECC 95% Species Protection - Technical Draft Default Guideline Values [3]
PFPrS	<0.025	0.01	0.0098	0.0097	0.012	0.013	<0.025	-	-	-
PFBS	0.046	0.022	0.024	0.023	0.026	0.026	0.026	-	-	-
PFPeS	0.057	0.02	0.021	0.023	0.023	0.024	0.026	-	-	-
di-PFHxS	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	-	-	-
Mono-PFHxS	0.1	0.027	0.029	0.03	0.035	0.033	0.037	-	-	-
L-PFHxS	0.79	0.11	0.12	0.12	0.12	0.13	0.14	-	-	-
Total PFHxS[4]	0.89	0.14	0.15	0.15	0.16	0.16	0.18	-	-	-
PFHpS	0.029	0.0022	0.0026	0.0034	0.0023	0.0018	<0.025	-	-	-
di-PFOS	0.042	0.0029	0.0031	0.0024	0.0041	0.0029	<0.025	-	-	-
Mono-PFOS	0.46	0.02	0.022	0.013	0.021	0.019	<0.025	-	-	-
L-PFOS	0.53	0.0077	0.011	0.0071	0.0073	0.011	<0.025	-	-	-
Total PFOS[4]	1	0.031	0.036	0.022	0.032	0.033	<0.025	-	2	0.13
Sum of PFHxS and PFOS[5]	1.9	0.17	0.19	0.17	0.19	0.19	0.18	0.07	-	-
PFECHS	<0.025	-	-	-	-	<0.001	<0.025	-	-	-
PFBA	0.52	0.019	0.018	0.018	0.018	0.018	<0.1	-	-	-
PFPeA	2	0.11	0.1	0.1	0.093	0.089	0.11	-	-	-
PFHxA	1	0.09	0.092	0.097	0.088	0.082	0.093	-	-	-
PFHpA	0.49	0.028	0.027	0.025	0.029	0.03	0.036	-	-	-
PFOA	0.47	0.02	0.022	0.018	0.021	0.024	0.029	0.56	632	220
PFNA	0.26	0.0064	0.0078	0.0056	0.0062	0.0065	<0.025	-	-	-
PFDA	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	-	-	-
PFUnDA	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	-	-	-
PFTrDA	<0.1	-	<0.025	-	-	-	<0.1	-	-	-
PFTeDA	<0.1	-	<0.1	-	-	-	<0.1	-	-	-
PFDoDA	<0.1	-	<0.025	<0.005	<0.001	<0.001	<0.1	-	-	-
FOSA	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	-	-	-
MeFOSA	<0.1	<0.005	-	<0.005	<0.001	-	<0.1	-	-	-
MeFOSAA	<0.025	<0.005	<0.001	<0.005	<0.001	<0.001	<0.025	-	-	-
EtFOSAA	<0.025	<0.005	<0.001	<0.005	<0.001	<0.001	<0.025	-	-	-
4:2 FTS	<0.025	<0.005	<0.001	<0.001	<0.001	<0.001	<0.025	-	-	-
6:2 FTS	2.3	0.12	0.11	0.12	0.089	0.1	<1	-	-	-
8:2 FTS	<0.1	<0.005	<0.001	<0.001	<0.001	<0.001	<0.1	-	-	-
10:2 FTS	<0.025	-	-	-	-	<0.001	<0.025	-	-	-
FPrPA	<0.1	-	-	-	-	<0.001	<0.1	-	-	-
EtFOSA	<0.1	<0.005	-	<0.005	<0.001	-	<0.1	-	-	-
EtFOSE	<0.1	<0.005	-	<0.005	<0.001	-	<0.1	-	-	-
FPePA	<0.025	-	-	-	-	<0.001	<0.025	-	-	-
FHpPA	<0.025	-	-	-	-	<0.001	<0.025	-	-	-
F-53B minor	<0.05	-	-	-	-	<0.001	<0.05	-	-	-
HFPO-DA*	<0.05	-	-	-	-	<0.001	<0.05	-	-	-
Sum F-53B	<0.1	-	-	-	-	<0.001	<0.1	-	-	-
ADONA	<0.025	-	-	-	-	<0.001	<0.025	-	-	-
P37DMOA	<0.05	-	-	-	-	<0.001	<0.05	-	-	-
F-53B major	<0.1	-	-	-	-	<0.001	<0.1	-	-	-

Notes:

1. Results in µg/L.
2. Ministry of Health (MoH, 2017) Interim Guidance Level for Drinking Water, PFOA, PFOS and PFHxS.
3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan – 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. Sample is the retention portion

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 95% ecological guidelines.
1.2	Concentration exceeds 90% ecological guidelines.
3.6	Concentration exceeds interim drinking water guidelines

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) [1]

	PFAS in Groundwater							Guidelines		
Sample Name	WS2-1	WS2	OHA_WS2	WS02	OHA_QRY_WS2_5_221119	OHA_QRY_WS2_6_020620	OHA_QRY_WS2_7_290920			
Location	WS2	WS2	WS2	WS2	WS2	WS2	WS2			
Sample Date	24/07/2015	21/07/2017	21/02/2018	3/07/2018	22/11/2019	2/06/2020	29/09/2020			
Lab Report Number	ES1526917	1326866	1055089	1186581	1740590	1983524	2096325			
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base			
Sample Results								Interim Guidance Level for Drinking Water, MoH 2017 [2]	ANZECC 90% Species Protection - Technical Draft Default Guideline Values [3]	ANZECC 95% Species Protection - Technical Draft Default Guideline Values [3]
PFPrS	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBS	<0.02	<0.001	<0.001	0.0011	<0.001	<0.001	<0.001	-	-	-
PFPeS	-	<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	-	-	-
Mono-PFHxS	-	<0.001	<0.001	0.0011	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	-	0.0038	0.0033	0.0053	0.0031	0.0021	0.0024	-	-	-
Total PFHxS[4]	<0.02	0.0038	0.0033	0.0064	0.0031	0.0021	0.0024	-	-	-
PFHpS	-	<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	-	-	-
Mono-PFOS	-	<0.001	0.001	0.0016	<0.001	<0.001	<0.001	-	-	-
L-PFOS	-	<0.001	<0.001	0.0025	<0.001	0.0011	0.0016	-	-	-
Total PFOS[4]	<0.02	<0.001	0.001	0.0041	<0.001	0.0011	0.0016	-	2	0.13
Sum of PFHxS and PFOS[5]	-	0.0038	0.0043	0.01	0.0031	0.0032	0.004	0.07	-	-
PFECHS	-	-	-	-	-	-	-	-	-	-
PFBA	-	<0.005	<0.005	<0.005	0.0033	<0.005	0.0029	-	-	-
PFPeA	-	0.0072	0.0049	0.0076	0.0043	0.0027	0.0025	-	-	-
PFHxA	<0.02	0.004	0.0031	0.0055	0.0031	0.0017	0.0016	-	-	-
PFHpA	<0.02	0.002	0.0017	0.0028	0.0016	0.0011	<0.001	-	-	-
PFOA	<0.02	0.0018	0.0014	0.0024	0.0012	0.0036	<0.001	0.56	632	220
PFNA	<0.02	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFDA	<0.02	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFUnDA	<0.05	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFTrDA	<0.05	-	-	-	<0.001	<0.001	-	-	-	-
PFTeDA	<0.5	-	-	-	<0.001	<0.001	-	-	-	-
PFDoDA	<0.05	<0.005	-	-	<0.001	<0.001	<0.001	-	-	-
FOSA	<0.02	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.5	<0.005	<0.005	-	<0.001	<0.001	-	-	-	-
MeFOSAA	-	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	-	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	-	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-
6:2 FTS	<0.1	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-
8:2 FTS	<0.1	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	-	-	-	-	-	-	-	-	-	-
FPrPA	-	-	-	-	-	-	-	-	-	-
EtFOSA	<0.05	<0.005	<0.005	-	<0.001	<0.001	-	-	-	-
EtFOSE	<0.5	<0.005	<0.005	<0.005	<0.001	<0.001	-	-	-	-
FPePA	-	-	-	-	-	-	-	-	-	-
FHpPA	-	-	-	-	-	-	-	-	-	-
F-53B minor	-	-	-	-	-	-	-	-	-	-
HFPO-DA*	-	-	-	-	-	-	-	-	-	-
Sum F-53B	-	-	-	-	-	-	-	-	-	-
ADONA	-	-	-	-	-	-	-	-	-	-
P37DMOA	-	-	-	-	-	-	-	-	-	-
F-53B major	-	-	-	-	-	-	-	-	-	-

Notes:

1. Results in µg/L.

2. Ministry of Health (MoH, 2017) Interim Guidance Level for Drinking Water, PFOA, PFOS and PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan – 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. Sample is the retention portion

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 95% ecological guidelines.
1.2	Concentration exceeds 90% ecological guidelines.
3.6	Concentration exceeds interim drinking water guidelines

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) [1]

	PFAS in Groundwater							Guidelines		
Sample Name	OHA_QRY_WS2_8_181120	OHA_QRY_WS2_9_180321	OHA_QRY_WS2_10_220621	OHA_QRY_WS2_11_281021	OHA_ADJ_GW106_1_160321	OHA_ADJ_GW106_2_291021	OHA_ADJ_GW107_1_011020			
Location	WS2	WS2	WS2	WS2	GW106	GW106	GW107			
Sample Date	18/11/2020	18/03/2021	22/06/2021	28/10/2021	16/03/2021	29/10/2021	1/10/2020			
Lab Report Number	2172205	2327922	2434042	2593734	2316433	2590583	2096735			
Monitoring Zone	On-base	On-base	On-base	On-base	Off-site	Off-site	Off-site			
Sample Results								Interim Guidance Level for Drinking Water, MoH 2017 [2]	ANZECC 90% Species Protection - Technical Draft Default Guideline Values [3]	ANZECC 95% Species Protection - Technical Draft Default Guideline Values [3]
PFPrS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBS	<0.001	<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	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	0.0041	0.0029	0.0027	0.0044	<0.001	<0.001	<0.001	-	-	-
Total PFHxS[4]	0.0041	0.0029	0.0027	0.0044	<0.001	<0.001	<0.001	-	-	-
PFHpS	<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	-	-	-
Mono-PFOS	<0.001	<0.001	<0.001	0.0011	<0.001	<0.001	<0.001	-	-	-
L-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFOS[4]	<0.001	<0.001	<0.001	0.0011	<0.001	<0.001	<0.001	-	2	0.13
Sum of PFHxS and PFOS[5]	0.0041	0.0029	0.0027	0.0055	<0.001	<0.001	<0.001	0.07	-	-
PFECHS	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFBA	0.0035	0.0034	<0.005	0.0039	<0.002	<0.001	<0.001	-	-	-
PFPeA	0.0041	0.004	0.0032	0.0048	<0.001	<0.001	<0.001	-	-	-
PFHxA	0.003	0.0026	0.002	0.0034	<0.001	<0.001	<0.001	-	-	-
PFHpA	0.0019	0.0015	0.0014	0.0017	<0.001	<0.001	<0.001	-	-	-
PFOA	0.0015	0.0012	0.0013	0.0016	<0.001	<0.001	<0.001	0.56	632	220
PFNA	<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	-	-	-	-
PFUnDA	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFTrDA	-	-	<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	-	-	-
MeFOSA	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
MeFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
EtFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
4:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
6:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
8:2 FTS	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	-	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-
FPrPA	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
EtFOSA	-	-	<0.001	<0.001	<0.001	<0.001	-	-	-	-
EtFOSE	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
FPePA	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
FHpPA	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
F-53B minor	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
HFPO-DA*	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Sum F-53B	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
ADONA	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
P37DMOA	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
F-53B major	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-

Notes:

1. Results in µg/L.

2. Ministry of Health (MoH, 2017) Interim Guidance Level for Drinking Water, PFOA, PFOS and PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan – 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. Sample is the retention portion

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 95% ecological guidelines.
1.2	Concentration exceeds 90% ecological guidelines.
3.6	Concentration exceeds interim drinking water guidelines

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) [1]

	PFAS in Groundwater							Guidelines		
Sample Name	OHA_ADJ_GW107_2_291021	OHA_ADJ_GW108_1_011020	OHA_ADJ_GW108_2_150321	OHA_ADJ_GW108_3_291021	OHA_ADJ_GW109_1_011020	OHA_ADJ_GW109_2_150321	OHA_ADJ_GW109_3_291021			
Location	GW107	GW108	GW108	GW108	GW109	GW109	GW109			
Sample Date	29/10/2021	15/03/2021	15/03/2021	29/10/2021	1/10/2020	15/03/2021	29/10/2021			
Lab Report Number	2590579	2096735	2313652	2590569	2096735	2313643	2593930			
Monitoring Zone	Off-site	Off-site	Off-site	Off-site	Off-site	Off-site	Off-site			
Sample Results								Interim Guidance Level for Drinking Water, MoH 2017 [2]	ANZECC 90% Species Protection - Technical Draft Default Guideline Values [3]	ANZECC 95% Species Protection - Technical Draft Default Guideline Values [3]
PFPrS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBS	<0.001	<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	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFHxS[4]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpS	<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	-	-	-
Mono-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFOS[4]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	2	0.13
Sum of PFHxS and PFOS[5]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.07	-	-
PFECHS	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	-	-
PFBA	<0.001	<0.001	0.0011	<0.001	<0.001	<0.001	<0.001	-	-	-
PFPeA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHxA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.56	632	220
PFNA	<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	-	-	-
PFUnDA	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	-	-
PFTrDA	<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	-	-	-
MeFOSA	<0.001	-	-	<0.001	-	-	<0.001	-	-	-
MeFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
6:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
8:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	<0.001	-	-	<0.001	-	-	<0.001	-	-	-
FPrPA	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	-	-
EtFOSA	<0.001	-	-	<0.001	-	-	<0.001	-	-	-
EtFOSE	<0.001	<0.001	-	<0.001	<0.001	-	<0.001	-	-	-
FPePA	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	-	-
FHpPA	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	-	-
F-53B minor	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	-	-
HFPO-DA*	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	-	-
Sum F-53B	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	-	-
ADONA	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	-	-
P37DMOA	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	-	-
F-53B major	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	-	-	-

Notes:

1. Results in µg/L.

2. Ministry of Health (MoH, 2017) Interim Guidance Level for Drinking Water, PFOA, PFOS and PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan – 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. Sample is the retention portion

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 95% ecological guidelines.
1.2	Concentration exceeds 90% ecological guidelines.
3.6	Concentration exceeds interim drinking water guidelines

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) [1]

	PFAS in Groundwater							Guidelines		
Sample Name	OHA_ADJ_GW112.1_1_180321	OHA_ADJ_GW112.1_2_281021	OHA_ADJ_GW112.2_1_180321	OHA_ADJ_GW112.2_2_281021	OHA_ADJ_GW31_1_120218	OHA_ADJ_GW31_2_230518	OHA_ADJ_GW31_3_12918	Interim Guidance Level for Drinking Water, MoH 2017 [2]	ANZECC 90% Species Protection - Technical Draft Default Guideline Values [3]	ANZECC 95% Species Protection - Technical Draft Default Guideline Values [3]
Location	GW112.1	GW112.1	GW112.2	GW112.2	GW31	GW31	GW31			
Sample Date	18/03/2021	28/10/2021	18/03/2021	28/10/2021	12/02/2018	23/05/2018	12/09/2018			
Lab Report Number	2335132	2593744	2335132	2593744	1032528	1153593	1252502			
Monitoring Zone	Off-site	Off-site	Off-site	Off-site	Off-site	Off-site	Off-site			
Sample Results										
PFPrS	<0.001	0.012	0.012	<0.001	0.0033	0.0038	0.0058	-	-	-
PFBS	<0.001	0.028	0.03	<0.001	0.011	0.01	0.0095	-	-	-
PFPeS	<0.001	0.033	0.035	<0.001	0.014	0.0089	0.0084	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	<0.001	0.052	0.056	<0.001	0.016	0.013	0.014	-	-	-
L-PFHxS	<0.001	0.25	0.29	<0.001	0.064	0.055	0.056	-	-	-
Total PFHxS[4]	<0.001	0.3	0.35	<0.001	0.08	0.068	0.07	-	-	-
PFHpS	<0.001	0.0076	0.0075	<0.001	0.0014	0.0011	0.0011	-	-	-
di-PFOS	<0.001	0.011	0.012	<0.001	0.0042	0.002	<0.001	-	-	-
Mono-PFOS	<0.001	0.14	0.16	<0.001	0.033	0.016	0.016	-	-	-
L-PFOS	<0.001	0.21	0.21	<0.001	0.023	0.0079	0.0058	-	-	-
Total PFOS[4]	<0.001	0.36	0.38	<0.001	0.06	0.026	0.022	-	2	0.13
Sum of PFHxS and PFOS[5]	<0.001	0.66	0.73	<0.001	0.14	0.094	0.092	0.07	-	-
PFECHS	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-
PFBA	<0.001	0.11	0.11	<0.001	0.055	0.035	0.035	-	-	-
PFPeA	<0.001	0.42	0.4	<0.001	0.21	0.097	0.083	-	-	-
PFHxA	<0.001	0.33	0.34	<0.001	0.14	0.074	0.067	-	-	-
PFHpA	<0.001	0.17	0.17	<0.001	0.053	0.027	0.024	-	-	-
PFOA	<0.001	0.094	0.092	<0.001	0.024	0.013	0.011	0.56	632	220
PFNA	<0.001	0.037	0.041	<0.001	0.0059	0.0021	0.0014	-	-	-
PFDA	<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	-	-	-	-	-	<0.025	<0.005	-	-	-
PFTeDA	-	-	-	-	-	<0.1	<0.005	-	-	-
PFDoDA	-	<0.001	-	<0.001	<0.001	<0.025	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	-	<0.001	<0.001	<0.001	<0.025	<0.005	<0.001	-	-	-
MeFOSAA	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	-	-	-
EtFOSAA	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	-	-	-
4:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	-	-	-
6:2 FTS	<0.001	0.1	0.066	0.0052	0.036	0.0092	0.0052	-	-	-
8:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	-	-	-
10:2 FTS	<0.001	<0.001	-	<0.001	-	-	-	-	-	-
FPrPA	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-
EtFOSA	-	<0.001	-	<0.001	<0.025	<0.001	<0.001	-	-	-
EtFOSE	-	<0.001	-	<0.001	<0.025	<0.005	<0.001	-	-	-
FPePA	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-
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	-	-	-	-	-	-
Sum F-53B	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-
ADONA	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-
P37DMOA	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-
F-53B major	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-

Notes:

1. Results in µg/L.
2. Ministry of Health (MoH, 2017) Interim Guidance Level for Drinking Water, PFOA, PFOS and PFHxS.
3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan – 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. Sample is the retention portion

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 95% ecological guidelines.
1.2	Concentration exceeds 90% ecological guidelines.
3.6	Concentration exceeds interim drinking water guidelines

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) [1]

	PFAS in Groundwater							Guidelines		
Sample Name	OHA_ADJ_GW31_4_290920	OHA_ADJ_GW31_5_160321	OHA_ADJ_GW31_6_291021	OHA_ADJ_GW53_1_150218	OHA_ADJ_GW53_2_150518	OHA_ADJ_GW53_3_10918	OHA_ADJ_GW53_4_300920			
Location	GW31	GW31	GW31	GW53	GW53	GW53	GW53			
Sample Date	29/09/2020	16/03/2021	29/10/2021	15/02/2018	15/05/2018	10/09/2018	30/09/2020			
Lab Report Number	2096319	2316425	2593739	1040534	1139707	1244388	2096317			
Monitoring Zone	Off-site	Off-site	Off-site	Off-site	Off-site	Off-site	Off-base			
Sample Results								Interim Guidance Level for Drinking Water, MoH 2017 [2]	ANZECC 90% Species Protection - Technical Draft Default Guideline Values [3]	ANZECC 95% Species Protection - Technical Draft Default Guideline Values [3]
PFPrS	0.0045	0.0042	0.0054	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBS	0.01	0.011	0.009	<0.001	<0.001	<0.001	<0.001	-	-	-
PFPeS	0.0085	0.0096	0.0083	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	0.016	0.017	0.013	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	0.063	0.073	0.059	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFHxS[4]	0.079	0.09	0.072	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpS	0.0015	0.0016	0.0013	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFOS	0.0034	0.0034	0.0026	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	0.028	0.037	0.025	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFOS	0.013	0.028	0.011	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFOS[4]	0.044	0.068	0.039	<0.001	<0.001	<0.001	<0.001	-	2	0.13
Sum of PFHxS and PFOS[5]	0.12	0.16	0.11	<0.001	<0.001	<0.001	<0.001	0.07	-	-
PFECHS	-	<0.001	<0.001	-	-	-	-	-	-	-
PFBA	0.047	0.06	0.042	<0.005	<0.005	<0.005	<0.001	-	-	-
PFPeA	0.15	0.25	0.13	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHxA	0.12	0.17	0.083	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpA	0.042	0.063	0.031	<0.001	<0.001	<0.001	<0.001	-	-	-
PFOA	0.019	0.025	0.016	<0.001	<0.001	<0.001	<0.001	0.56	632	220
PFNA	0.0039	0.0076	0.0029	<0.001	<0.001	<0.001	<0.001	-	-	-
PFDA	<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	-	-	-	<0.025	<0.025	-	-	-	-	-
PFTeDA	-	-	<0.001	-	-	-	-	-	-	-
PFDoDA	<0.001	<0.001	<0.001	<0.025	<0.025	<0.001	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.001	<0.001	<0.001	<0.025	<0.005	<0.001	<0.001	-	-	-
MeFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
6:2 FTS	0.0049	0.0052	0.0036	<0.001	<0.01	<0.001	<0.001	-	-	-
8:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	-	<0.001	<0.001	-	-	-	-	-	-	-
FPrPA	-	<0.001	<0.001	-	-	-	-	-	-	-
EtFOSA	<0.001	<0.001	-	<0.025	<0.001	<0.001	<0.001	-	-	-
EtFOSE	<0.001	<0.001	-	<0.025	<0.005	<0.005	<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	-	-	-	-	-	-	-

Notes:

1. Results in µg/L.
2. Ministry of Health (MoH, 2017) Interim Guidance Level for Drinking Water, PFOA, PFOS and PFHxS.
3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan – 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. Sample is the retention portion

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 95% ecological guidelines.
1.2	Concentration exceeds 90% ecological guidelines.
3.6	Concentration exceeds interim drinking water guidelines

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) [1]

	PFAS in Groundwater							Guidelines		
Sample Name	OHA_ADJ_GW53_5_160321	OHA_ADJ_GW53_6_291021	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			
Location	GW53	GW53	GW6	GW6	GW6	GW6	GW6			
Sample Date	16/03/2021	29/10/2021	11/12/2017	13/02/2018	14/05/2018	13/09/2018	29/09/2020			
Lab Report Number	2316429	2593735	989127	1032179	1133549	1260155	2096315			
Monitoring Zone	Off-base	On-base	On-base	On-base	On-base	On-base	On-base			
Sample Results								Interim Guidance Level for Drinking Water, MoH 2017 [2]	ANZECC 90% Species Protection - Technical Draft Default Guideline Values [3]	ANZECC 95% Species Protection - Technical Draft Default Guideline Values [3]
PFPrS	<0.001	<0.001	0.0022	0.0034	-	0.004	0.0025	-	-	-
PFBS	<0.001	<0.001	0.0067	0.0065	0.0022	0.0038	0.0027	-	-	-
PFPeS	<0.001	<0.001	0.0054	0.0056	0.0013	0.0038	0.0039	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	<0.001	<0.001	0.011	0.0097	0.002	0.0026	0.0023	-	-	-
L-PFHxS	<0.001	<0.001	0.066	0.054	0.014	0.014	0.014	-	-	-
Total PFHxS[4]	<0.001	<0.001	0.077	0.064	0.016	0.017	0.016	-	-	-
PFHpS	<0.001	<0.001	0.0018	0.0023	<0.001	<0.001	<0.001	-	-	-
di-PFOS	<0.001	<0.001	0.0027	0.0022	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	<0.001	<0.001	0.026	0.025	0.0089	0.003	0.0044	-	-	-
L-PFOS	<0.001	<0.001	0.023	0.023	0.0092	0.0014	0.0042	-	-	-
Total PFOS[4]	<0.001	<0.001	0.052	0.05	0.018	0.0044	0.0086	-	2	0.13
Sum of PFHxS and PFOS[5]	<0.001	<0.001	0.13	0.11	0.034	0.021	0.025	0.07	-	-
PFECHS	<0.001	<0.001	-	-	-	-	-	-	-	-
PFBA	<0.002	<0.001	0.025	0.02	-	<0.01	-	-	-	-
PFPeA	<0.001	<0.001	0.057	0.044	0.0035	0.0037	0.003	-	-	-
PFHxA	<0.001	<0.001	0.044	0.038	0.0039	0.0053	0.0038	-	-	-
PFHpA	<0.001	<0.001	0.02	0.016	0.0018	0.0021	0.0024	-	-	-
PFOA	<0.001	<0.001	0.014	0.014	0.0022	0.0018	0.0019	0.56	632	220
PFNA	<0.001	<0.001	0.0038	0.0034	<0.001	<0.001	<0.001	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFUnDA	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-
PFTrDA	-	-	-	-	<0.025	<0.005	-	-	-	-
PFTeDA	-	<0.001	-	-	<0.025	<0.005	-	-	-	-
PFDoDA	<0.001	<0.001	-	<0.001	<0.025	<0.001	-	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.001	<0.001	-	-	<0.005	<0.001	<0.001	-	-	-
MeFOSAA	<0.001	<0.001	<0.005	<0.025	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<0.001	<0.001	<0.005	<0.025	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	<0.001	<0.001	<0.005	<0.001	<0.001	-	-	-	-	-
6:2 FTS	<0.001	<0.001	0.023	0.0032	<0.01	0.001	-	-	-	-
8:2 FTS	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	-	-	-	-
10:2 FTS	<0.001	<0.001	-	-	-	-	-	-	-	-
FPrPA	<0.001	<0.001	-	-	-	-	-	-	-	-
EtFOSA	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	-	-	-
EtFOSE	<0.001	<0.001	-	<0.025	<0.005	<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	-	-	-	-	-	-	-	-

Notes:

1. Results in µg/L.

2. Ministry of Health (MoH, 2017) Interim Guidance Level for Drinking Water, PFOA, PFOS and PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan – 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. Sample is the retention portion

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 95% ecological guidelines.
1.2	Concentration exceeds 90% ecological guidelines.
3.6	Concentration exceeds interim drinking water guidelines

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) [1]

	PFAS in Groundwater							Guidelines		
Sample Name	OHA_ADJ_GW6_6_160321	OHA_ADJ_GW6_7_281021	OHA_ADJ_GW65_1_210218	OHA_ADJ_GW65_2_170518	OHA_ADJ_GW65_3_11918	OHA_ADJ_GW65_4_290920	OHA_ADJ_GW65_5_150321			
Location	GW6	GW6	GW65	GW65	GW65	GW65	GW65			
Sample Date	16/03/2021	28/10/2021	21/02/2018	17/05/2018	11/09/2018	29/09/2020	15/03/2021			
Lab Report Number	2313648	2590577	1047797	1142284	1244707	2096328	2313647			
Monitoring Zone	On-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base			
Sample Results								Interim Guidance Level for Drinking Water, MoH 2017 [2]	ANZECC 90% Species Protection - Technical Draft Default Guideline Values [3]	ANZECC 95% Species Protection - Technical Draft Default Guideline Values [3]
PFPrS	0.0016	0.0025	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBS	0.0023	0.0028	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFPeS	0.0031	0.0033	<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	-	-	-
Mono-PFHxS	0.0035	0.0026	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	0.014	0.013	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFHxS[4]	0.018	0.016	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpS	<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	-	-	-
Mono-PFOS	0.0038	0.0051	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFOS	0.0043	0.009	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFOS[4]	0.0081	0.014	<0.001	<0.001	<0.001	<0.001	<0.001	-	2	0.13
Sum of PFHxS and PFOS[5]	0.026	0.03	<0.001	<0.001	<0.001	<0.001	<0.001	0.07	-	-
PFECHS	<0.001	<0.001	-	-	-	-	<0.001	-	-	-
PFBA	0.011	0.0053	<0.005	<0.01	<0.005	<0.001	<0.001	-	-	-
PFPeA	<0.001	0.0068	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHxA	0.0072	0.0078	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpA	0.003	0.0033	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFOA	0.0031	0.0019	<0.001	<0.001	<0.001	<0.001	<0.001	0.56	632	220
PFNA	<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	-	-	-
PFUnDA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFTrDA	-	<0.001	-	<0.025	<0.001	-	-	-	-	-
PFTeDA	-	-	-	-	<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	-	-	-
MeFOSA	-	<0.001	-	<0.005	<0.005	<0.001	-	-	-	-
MeFOSAA	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	-	-	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-
6:2 FTS	-	0.0013	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-
8:2 FTS	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	-	<0.001	-	-	-	-	-	-	-	-
FPrPA	<0.001	<0.001	-	-	-	-	<0.001	-	-	-
EtFOSA	-	<0.001	-	<0.001	<0.005	<0.001	-	-	-	-
EtFOSE	-	<0.001	-	<0.005	<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	-	-	-

Notes:

1. Results in µg/L.

2. Ministry of Health (MoH, 2017) Interim Guidance Level for Drinking Water, PFOA, PFOS and PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan – 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. Sample is the retention portion

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 95% ecological guidelines.
1.2	Concentration exceeds 90% ecological guidelines.
3.6	Concentration exceeds interim drinking water guidelines

Table E-1: Groundwater Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) [1]

	PFAS in Groundwater							Guidelines		
Sample Name	OHA_ADJ_GW65_6_291021	OHA_ADJ_GW67_1_210218	OHA_ADJ_GW67_2_140518	OHA_ADJ_GW67_3_11918	OHA_ADJ_GW67_4_300920	OHA_ADJ_GW67_5_170321	OHA_ADJ_GW67_6_271021			
Location	GW65	GW67	GW67	GW67	GW67	GW67	GW67			
Sample Date	29/10/2021	21/02/2018	14/05/2018	11/09/2018	30/09/2020	17/03/2021	27/10/2021			
Lab Report Number	2593738	1047809	1134445	1244090	2096741	2317694	2618128			
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Off-base	Interim Guidance Level for Drinking Water, MoH 2017 [2]	ANZECC 90% Species Protection - Technical Draft Default Guideline Values [3]	ANZECC 95% Species Protection - Technical Draft Default Guideline Values [3]
Sample Results										
PFPrS	<0.001	<0.001	<0.001	-	<0.001	0.0013	<0.001	-	-	-
PFBS	<0.001	<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	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	<0.001	0.0016	0.0018	0.0012	<0.001	<0.001	<0.001	-	-	-
Total PFHxS[4]	<0.001	0.0016	0.0018	0.0012	<0.001	<0.001	<0.001	-	-	-
PFHpS	<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	-	-	-
Mono-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Total PFOS[4]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	2	0.13
Sum of PFHxS and PFOS[5]	<0.001	0.0016	0.0018	0.0012	<0.001	<0.001	<0.001	0.07	-	-
PFECHS	<0.001	-	-	-	-	<0.001	<0.001	-	-	-
PFBA	<0.001	-	-	-	<0.001	0.0072	-	-	-	-
PFPeA	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	-	-
PFHxA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFHpA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.56	632	220
PFNA	<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	-	-	-
PFUnDA	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	-	-	-
PFTrDA	-	-	<0.025	<0.005	-	-	-	-	-	-
PFTeDA	<0.001	-	<0.025	<0.005	-	-	<0.001	-	-	-
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	-	-	-
MeFOSA	<0.001	-	<0.005	<0.005	-	-	<0.001	-	-	-
MeFOSAA	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	<0.001	<0.005	<0.001	-	-	<0.001	<0.001	-	-	-
6:2 FTS	<0.001	<0.005	<0.01	<0.001	<0.001	<0.001	-	-	-	-
8:2 FTS	<0.001	<0.005	<0.001	<0.001	<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	-	<0.001	<0.005	-	-	<0.001	-	-	-
EtFOSE	<0.001	-	<0.005	<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	-	-	-

Notes:

1. Results in µg/L.

2. Ministry of Health (MoH, 2017) Interim Guidance Level for Drinking Water, PFOA, PFOS and PFHxS.

3. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan – 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. Sample is the retention portion

-	Parameter not tested / no guideline value available
0.3	Concentration exceeds 95% ecological guidelines.
1.2	Concentration exceeds 90% ecological guidelines.
3.6	Concentration exceeds interim drinking water guidelines

Table E-2: Surface Water Sampling Results - Per- and Polv-Fluoroalkvl Substances (PFAS) [1]

	PFAS Samples in Surface Water						Guidelines		
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	ANZECC 80% Species Protection - Technical Draft Default Guideline Values [2]	ANZECC 90% Species Protection - Technical Draft Default Guideline Values [2]	ANZECC 95% Species Protection - Technical Draft Default Guideline Values [2]
Location_Code	SW33	SW33	SW33	SW33	SW33	SW33			
Sampled_Date_Time	19/02/2018	22/05/2018	12/09/2018	29/09/2020	16/03/2021	29/10/2021			
Lab_Report_Number	1047510	1147417	1248198	2094714	2316431	2590572			
Sample Results									
PFPrS	0.0036	<0.001	0.0034	<0.025	0.002	0.0035	-	-	-
PFBS	0.012	<0.001	0.0077	<0.025	0.0062	0.0072	-	-	-
PFPeS	0.012	<0.001	0.0075	<0.025	0.0058	0.0077	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	-	-	-
Mono-PFHxS	0.019	<0.001	0.012	<0.025	0.0088	0.012	-	-	-
L-PFHxS	0.11	0.0015	0.067	<0.025	0.049	0.074	-	-	-
Total PFHxS [3]	0.13	0.0015	0.079	<0.025	0.058	0.086	-	-	-
PFHpS	0.0033	<0.001	0.0017	<0.025	0.0013	0.002	-	-	-
di-PFOS	0.0046	<0.001	0.0025	<0.025	0.0021	0.0028	-	-	-
Mono-PFOS	0.06	<0.001	0.032	<0.025	0.036	0.041	-	-	-
L-PFOS	0.047	0.0013	0.024	<0.025	0.052	0.045	-	-	-
Total PFOS[3]	0.11	0.0013	0.058	<0.025	0.09	0.089	31	2	0.13
Sum of PFHxS and PFOS [5]	0.24	0.0028	0.14	<0.025	0.15	0.18	-	-	-
PFECHS	-	-	-	-	<0.001	<0.001	-	-	-
PFBA	0.087	-	0.044	<0.2	0.043	0.061	-	-	-
PFPeA	0.4	0.0037	0.16	<0.1	0.17	0.27	-	-	-
PFHxA	0.29	0.0033	0.13	<0.025	0.13	0.18	-	-	-
PFHpA	0.11	0.0013	0.049	<0.025	0.054	0.074	-	-	-
PFOA	0.051	<0.001	0.021	<0.025	0.021	0.027	1824	632	220
PFNA	0.018	<0.001	0.0055	<0.025	0.0092	0.0091	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	-	-	-
PFUnDA	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	-	-	-
PFTrDA	-	<0.005	-	<0.1	-	<0.001	-	-	-
PFTeDA	-	<0.025	-	<0.1	-	<0.001	-	-	-
PFDoDA	-	<0.005	-	<0.1	<0.001	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	-	-	-
MeFOSA	-	<0.001	<0.005	<0.1	<0.001	<0.001	-	-	-
MeFOSAA	<0.005	<0.001	<0.001	<0.025	<0.001	<0.001	-	-	-
EtFOSAA	<0.005	<0.001	<0.001	<0.025	<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	-	-	-
8:2 FTS	<0.005	<0.001	<0.001	<0.1	<0.001	<0.001	-	-	-
10:2 FTS	-	-	-	-	<0.001	<0.001	-	-	-
FPrPA	-	-	-	-	<0.001	<0.001	-	-	-
EtFOSA	-	<0.001	<0.005	<0.1	<0.001	<0.001	-	-	-
EtFOSE	<0.025	<0.005	<0.005	<0.1	<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	-	-	-

Notes:

1. Results in µg/L.
2. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.
3. 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.
4. 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.
2	Concentration exceeds 90% ecological guidelines.
3.6	Concentration exceeds 80% ecological guidelines.

Table E-2: Surface Water Sampling Results - Per- and Polv-Fluoroalkvl Substances (PFAS) [1]

	PFAS Samples in Surface Water						Guidelines		
Field_ID	OHA_ADJ_SW36_1_220218	OHA_ADJ_SW36_2_170518	OHA_ADJ_SW36_3_120918	OHA_ADJ_SW36_4_290920	OHA_ADJ_SW36_5_160321	OHA_ADJ_SW36_7_291021	ANZECC 80% Species Protection - Technical Draft Default Guideline Values [2]	ANZECC 90% Species Protection - Technical Draft Default Guideline Values [2]	ANZECC 95% Species Protection - Technical Draft Default Guideline Values [2]
Location_Code	SW36	SW36	SW36	SW36	SW36	SW36			
Sampled_Date_Time	22/02/2018	17/05/2018	12/09/2018	29/09/2020	16/03/2021	29/10/2021			
Lab_Report_Number	1047802	1142104	1251329	2094717	2370192	2590570			
Sample Results									
PFPrS	<0.001	<0.001	<0.001	<0.025	<0.001	0.0014	-	-	-
PFBS	<0.001	<0.001	<0.001	<0.025	0.0017	0.0026	-	-	-
PFPeS	<0.001	<0.001	<0.001	<0.025	0.0019	0.0028	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.025	0.003	0.0039	-	-	-
L-PFHxS	<0.001	<0.001	<0.001	<0.025	0.018	0.023	-	-	-
Total PFHxS [3]	<0.001	<0.001	<0.001	<0.025	0.021	0.027	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	-	-	-
Mono-PFOS	<0.001	<0.001	<0.001	<0.025	0.017	0.011	-	-	-
L-PFOS	<0.001	<0.001	<0.001	<0.025	0.016	0.0095	-	-	-
Total PFOS[3]	<0.001	<0.001	<0.001	<0.025	0.033	0.02	31	2	0.13
Sum of PFHxS and PFOS [5]	<0.001	<0.001	<0.001	<0.025	0.054	0.047	-	-	-
PFECHS	-	-	-	-	<0.001	<0.001	-	-	-
PFBA	<0.005	<0.01	<0.005	<0.2	0.019	0.017	-	-	-
PFPeA	<0.001	<0.001	<0.001	<0.1	0.072	0.06	-	-	-
PFHxA	<0.001	<0.001	<0.001	<0.025	0.05	0.039	-	-	-
PFHpA	<0.001	<0.001	<0.001	<0.025	0.026	0.018	-	-	-
PFOA	<0.001	<0.001	<0.001	<0.025	0.012	0.0079	1824	632	220
PFNA	<0.001	<0.001	<0.001	<0.025	0.0048	0.0026	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	-	-	-
PFUnDA	<0.001	<0.001	<0.005	<0.025	<0.001	<0.001	-	-	-
PFTrDA	-	<0.025	<0.005	<0.1	-	<0.001	-	-	-
PFTeDA	-	<0.1	-	<0.1	-	<0.001	-	-	-
PFDoDA	-	<0.025	<0.005	<0.1	<0.001	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	-	-	-
MeFOSA	-	<0.005	<0.005	<0.1	<0.001	<0.001	-	-	-
MeFOSAA	<0.005	<0.001	<0.005	<0.025	<0.001	<0.001	-	-	-
EtFOSAA	<0.005	<0.001	<0.005	<0.025	<0.001	<0.001	-	-	-
4:2 FTS	<0.005	<0.001	<0.001	<0.025	<0.001	-	-	-	-
6:2 FTS	<0.005	<0.001	<0.001	<0.05	<0.001	<0.001	-	-	-
8:2 FTS	<0.005	<0.001	<0.005	<0.1	<0.001	<0.001	-	-	-
10:2 FTS	-	-	-	-	<0.001	<0.001	-	-	-
FPrPA	-	-	-	-	<0.001	<0.001	-	-	-
EtFOSA	-	<0.001	<0.005	<0.1	<0.001	<0.001	-	-	-
EtFOSE	-	<0.005	<0.005	<0.1	<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	-	-	-
	-	-							

Notes:

1. Results in µg/L.
2. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.
3. 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.
4. 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.
2	Concentration exceeds 90% ecological guidelines.
3.6	Concentration exceeds 80% ecological guidelines.

Table E-2: Surface Water Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) [1]

	PFAS Samples in Surface Water					Guidelines		
Field_ID	SW6	SW6	SW6	OHA_DPB_SW6_4_290920	OHA_DPB_SW6_6_291021	ANZECC 80% Species Protection - Technical Draft Default Guideline Values [2]	ANZECC 90% Species Protection - Technical Draft Default Guideline Values [2]	ANZECC 95% Species Protection - Technical Draft Default Guideline Values [2]
Location_Code	SW6	SW6	SW6	SW6	SW6			
Sampled_Date_Time	4/08/2017	1/11/2017	3/07/2018	29/09/2020	29/10/2021			
Lab_Report_Number	841470	937355	1186578	2094713	2590926			
Sample Results								
PFPrS	0.023	0.042	0.013	<0.025	<0.025	-	-	-
PFBS	0.079	0.12	0.037	<0.025	0.053	-	-	-
PFPeS	0.083	0.18	0.045	<0.025	0.057	-	-	-
di-PFHxS	0.002	0.0039	<0.001	<0.025	<0.025	-	-	-
Mono-PFHxS	0.3	0.28	0.073	0.03	0.11	-	-	-
L-PFHxS	1.6	1.8	0.48	0.19	0.86	-	-	-
Total PFHxS [3]	1.9	2.1	0.55	0.22	0.97	-	-	-
PFHpS	0.066	0.13	0.027	<0.025	0.046	-	-	-
di-PFOS	0.036	0.096	0.013	<0.025	0.039	-	-	-
Mono-PFOS	0.52	0.82	0.15	0.093	0.58	-	-	-
L-PFOS	0.86	1	0.21	0.13	0.83	-	-	-
Total PFOS[3]	1.4	1.9	0.37	0.22	1.4	31	2	0.13
Sum of PFHxS and PFOS [5]	-	-	0.92	0.44	2.4	-	-	-
PFECHS	-	-	-	-	<0.025	-	-	-
PFBA	0.23	0.32	0.11	<0.2	0.16	-	-	-
PFPeA	1.1	1.5	0.44	0.22	0.62	-	-	-
PFHxA	1	0.96	0.32	0.14	0.39	-	-	-
PFHpA	0.32	0.47	0.16	0.073	0.23	-	-	-
PFOA	0.61	0.73	0.19	0.065	0.34	1824	632	220
PFNA	0.15	0.32	0.092	0.029	0.18	-	-	-
PFDA	0.0012	0.002	0.0011	<0.025	<0.025	-	-	-
PFUnDA	<0.005	0.0012	<0.001	<0.025	<0.025	-	-	-
PFTrDA	-	-	<0.025	<0.1	<0.1	-	-	-
PFTeDA	-	-	<0.1	<0.1	<0.1	-	-	-
PFDoDA	<0.005	<0.001	<0.025	<0.1	<0.1	-	-	-
FOSA	<0.001	0.0012	<0.001	<0.025	<0.025	-	-	-
MeFOSA	<0.005	<0.005	<0.005	<0.1	<0.1	-	-	-
MeFOSAA	<0.005	<0.005	<0.001	<0.025	<0.025	-	-	-
EtFOSAA	<0.005	<0.005	<0.001	<0.025	<0.025	-	-	-
4:2 FTS	0.0059	0.0053	<0.001	<0.025	<0.025	-	-	-
6:2 FTS	0.81	1.5	0.33	0.053	0.62	-	-	-
8:2 FTS	<0.005	0.0054	<0.001	<0.1	<0.1	-	-	-
10:2 FTS	-	-	-	-	<0.025	-	-	-
FPrPA	-	-	-	-	<0.1	-	-	-
EtFOSA	<0.005	<0.005	<0.005	<0.1	<0.1	-	-	-
EtFOSE	<0.005	<0.005	<0.005	<0.1	<0.1	-	-	-
FPePA	-	-	-	-	<0.025	-	-	-
FHpPA	-	-	-	-	<0.025	-	-	-
F-53B minor	-	-	-	-	<0.05	-	-	-
HFPO-DA*	-	-	-	-	<0.05	-	-	-
Sum F-53B	-	-	-	-	<0.1	-	-	-
ADONA	-	-	-	-	<0.025	-	-	-
P37DMOA	-	-	-	-	<0.05	-	-	-
F-53B major		-		<0.001	<0.1	-	-	-

Notes:

1. Results in µg/L.
2. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.
3. 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.
4. 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.
2	Concentration exceeds 90% ecological guidelines.
3.6	Concentration exceeds 80% ecological guidelines.

Table E-2: Surface Water Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) [1]

	PFAS Samples in Surface Water				Guidelines		
Field_ID	SW4	OHA_SHW_SW4_2_021020	OHA_SHW_SW4_3_180321	OHA_SHW_SW4_4_271021	ANZECC 80% Species Protection - Technical Draft Default Guideline Values [2]	ANZECC 90% Species Protection - Technical Draft Default Guideline Values [2]	ANZECC 95% Species Protection - Technical Draft Default Guideline Values [2]
Location_Code	SW4	SW4	SW4	SW4			
Sampled_Date_Time	4/08/2017	2/10/2020	18/03/2021	27/10/2021			
Lab_Report_Number	841470	2094371	2327926	2576268			
Sample Results							
PFPrS	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBS	<0.001	<0.001	0.0012	<0.001	-	-	-
PFPeS	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	<0.001	<0.001	0.005	<0.001	-	-	-
Total PFHxS [3]	<0.001	<0.001	0.005	<0.001	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	<0.001	<0.001	0.0029	<0.001	-	-	-
L-PFOS	<0.001	<0.001	0.0036	<0.001	-	-	-
Total PFOS[3]	<0.001	<0.001	0.0065	<0.001	31	2	0.13
Sum of PFHxS and PFOS [5]	-	<0.001	0.012	<0.001	-	-	-
PFECHS	-	-	<0.001	<0.001	-	-	-
PFBA	0.0054	0.0095	0.037	0.0085	-	-	-
PFPeA	<0.001	<0.001	0.096	0.0035	-	-	-
PFHxA	<0.001	0.001	0.079	0.0016	-	-	-
PFHpA	<0.001	<0.001	0.048	0.0011	-	-	-
PFOA	<0.001	<0.001	0.013	<0.001	1824	632	220
PFNA	<0.001	<0.001	0.0039	<0.001	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	-	-	-
PFUnDA	<0.005	<0.001	<0.001	<0.001	-	-	-
PFTrDA	-	<0.001	<0.005	-	-	-	-
PFTeDA	-	<0.001	-	-	-	-	-
PFDoDA	<0.005	<0.001	<0.005	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	-	-	<0.005	<0.001	-	-	-
MeFOSAA	<0.005	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<0.005	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	<0.005	-	<0.001	-	-	-	-
6:2 FTS	<0.005	<0.001	0.0096	-	-	-	-
8:2 FTS	<0.005	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	-	-	<0.001	<0.001	-	-	-
FPrPA	-	-	<0.001	<0.001	-	-	-
EtFOSA	-	-	<0.005	<0.001	-	-	-
EtFOSE	<0.005	-	<0.005	<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	-	-	-

Notes:

1. Results in µg/L.
2. Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft guideline values in PFAS National Environmental Management Plan – Table 5. The Heads of EPAs Australia and New Zealand (HEPA), January 2020.
3. 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.
4. 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.
2	Concentration exceeds 90% ecological guidelines.
3.6	Concentration exceeds 80% ecological guidelines.

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REGIONAL COUNCIL

horizons.govt.nz

24 hour freephone 0508 800 800
fax 06 952 2929 | **email** help@horizons.govt.nz
Private Bag 11025, Manawatu Mail Centre, Palmerston North 4442