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

23 February 2023

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, MARCH 2022

1.0 Introduction

Monitoring for per- and polyfluoroalkyl substances (PFAS) concentrations in groundwater and surface water was conducted between 28 and 30 March 2022 in accordance with the RNZAF Base Ohakea PFAS Investigation: Long Term Monitoring Plan (LTMP) (PDP, 2020a). This is the fourth round of monitoring to be conducted following the implementation of the LTMP (PDP, 2020a). Previous monitoring rounds, undertaken in October 2020, March 2021 and October 2021 are reported in PDP (2020b) and PDP (2021) and PDP (2022) 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 8 quality assurance/quality control (QA/QC) samples, including analysis of two duplicate samples; and
- Preparation of this report.

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

2.0 Methodology

2.1 Sampling Methodology

Sampling was undertaken by PDP field staff between 28 and 30 March 2022. 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. 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))	30/03/22
	WS1	Downgradient of FTA and near site boundary with a long existing monitoring record	29/03/22
	GW6	Downgradient of key source areas and historically elevated PFAS concentrations	29/03/22
	MW6	Key source area (run-up pit)	30/03/22
	MW9	Key source area (diversion tank for hangar deluge systems)	30/03/22
	WS2	North western plume edge (base drinking water supply)	30/03/22
	GW111.1	Downgradient of FTA.	30/03/22
	GW111.2	Downgradient of FTA. Deeper well (~40 m) to monitor the vertical extent of PFAS.	30/03/22
	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.	30/03/22
Other (non-NZDF) private and public land	GW67	North eastern plume edge	29/03/22
	GW31	Eastern plume edge	29/03/22
	GW53	Eastern plume edge	29/03/22
	GW65	Southern plume edge	29/03/22
	GW106	Plume is predicted to approach and then encompass the shallow well into the future.	29/03/22
	GW107	Act as a sentinel monitoring location e.g., to monitor the predicted maximum lateral edge of the future plume.	30/03/22
	GW108	Plume is predicted to approach and then encompass the shallow well into the future.	29/03/22
	GW109	Plume is predicted to approach and then encompass the shallow well into the future.	29/03/22
	GW112.1	Well near the centre of the main plume.	29/03/22
	GW112.2	Well near the centre of the main plume. Deeper well (~55 m) to monitor the vertical extent of PFAS.	28/03/22

Table 2: Surface Water Monitoring Locations

Location	Rationale	Sampled
SW6	Previous high PFAS concentrations leaving the base.	28/03/22
SW33	Resurgence of high PFAS concentrations on the Makowhai Stream downstream of the base. Accessible from the road.	28/03/22
SW36	Makowhai Stream just upstream from confluence with the Rangitikei River. To assess the maximum extent of PFAS in the Makowhai.	28/03/22
SW4	Upstream location to assess whether PFAS is present in the Makowhai before entering the base boundary.	30/03/22

2.2 Variations from the Monitoring Plan

There were no variations from the monitoring plan; all samples were able to be collected during the March 2022 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) during the October 2021 monitoring round, to continuously record groundwater pressures (levels) in the monitoring wells. The logger data was downloaded during the March 2022 monitoring round and the five months of data has been assessed. However, at least one years' worth of data is needed to provide a complete assessment of groundwater levels at the nested well locations. Data from the loggers will be downloaded during the next monitoring round (scheduled for October 2022) and an assessment of this data will be provided in the October 2022 report.

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 periodically throughout the monitoring round. Field sheets for each sample location are presented in Appendix C.

2.4 Antecedent Weather Conditions and Flow Conditions

The preceding two weeks had a cumulative rainfall of 83.5 mm, with all of that falling over a four-day period in the week leading up to sampling. The Rangitikei River and surrounding streams where surface water samples were collected were clear during the sampling round. The stream at SW4 and the drain at SW6 were observed to be flowing during this visit 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.
- 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. The results of the QA/QC sampling are reported in Appendix D and further discussed in Section 3.3.

3.0 Sample Results and Comparison with Selected Guideline Values

3.1 Selected Guideline Values

Table 3 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, 2022) 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), these are the compounds for which there is an applicable New Zealand and/or Australian guideline. When discussed as a collective, these will herein be referred to as 'the core PFAS compounds'. The sample analytical results for the core PFAS compounds are presented in Tables 4 and 5 with sample locations and results shown in Figure 2.

3.2.1 Groundwater Monitoring Wells

The results of the laboratory analyses for the core PFAS compounds in groundwater samples collected in March 2022 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 (March 2022 Sampling Round)

	Core PFAS Compounds (µg/L)		
Location	**Sum of Total PFOS + PFHxS**	**PFOA**	**Total PFOS**
WS1	0.21	0.028	0.041
WS2	0.0070	0.0017	0.0033
MW4	2.1	0.29	1.4
GW6	0.062	0.0088	0.031
MW6	13	0.68	8.2
MW9	2.2	0.51	1.2
GW111.1	0.29	0.064	0.20
GW111.2	<0.0010	<0.0010	<0.0010
GW111.3	0.0027	<0.0010	0.0027
GW31	0.11	0.017	0.042
GW53	<0.0010	<0.0010	<0.0010
GW65	<0.0010	<0.0010	<0.0010
GW67	<0.0010	<0.0010	<0.0010
GW106	<0.0010	<0.0010	<0.0010
GW107	<0.0010	<0.0010	<0.0010
GW108	<0.0010	<0.0010	<0.0010
GW109	<0.0010	<0.0010	<0.0010
GW112.1	0.48	0.093	0.18
GW112.2	<0.0010	<0.0010	<0.0010
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 March 2022 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: WS1 (0.21 µg/L), MW4 (2.1 µg/L), MW6 (13 µg/L), MW9 (2.2 µg/L), GW111.1 (0.29 µg/L), GW31 (0.11 µg/L) and GW112.1 (0.48 µg/L). None of these wells are currently used for drinking water supply.
- The concentration of PFOA in MW6 (0.68 µg/L) exceeded the MOH interim drinking water guideline value (DWG) of 0.56 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 five locations. These include: MW4 (1.4 µg/L), MW6 (8.2 µg/L), MW9 (1.2 µg/L), GW111.1 (0.20 µg/L) and GW112.1 (0.18 µg/L).
- The concentration of Total PFOS in MW6 (8.2 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 three locations (WS2, GW6 and GW111.3).
- The core PFAS compounds were not reported (i.e., below the laboratory LOR) at nine locations (GW111.2, GW53, GW65, GW67, GW106, GW107, GW108, GW109, and GW112.2).
- Perfluorobutanoic acid (PFBA) was detected at low concentrations in both GW67 (0.0087 µg/L) and GW108 (0.002 µg/L) during the March 2022 monitoring round (PFBA is not one of the core PFAS compounds for which there is an applicable guideline).

3.2.2 Surface Water

The results of the laboratory analyses for the core PFAS compounds in surface water samples collected in March 2022 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 (March 2022 Sampling Round)

	Core PFAS Compounds (µg/L)		
Location	**Sum of Total PFOS + PFHxS**	**PFOA**	**Total PFOS**
SW4	<0.0010	<0.0010	<0.0010
SW6	2.5	0.36	1.4
SW33	0.079	0.010	0.040
SW36	0.026	0.0031	0.012
Guideline Values	**Sum of Total PFOS + PFHxS**	**PFOA**	**Total PFOS**
Ecological Freshwater Guideline 80% ecosystem protection [1]	-	1,824 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 March 2022 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) exceeded the 95% EGV of 0.13 µg/L.
- The core PFAS compounds were detected at concentrations above the LOR but below the relevant guideline values at two locations (SW33 and SW36).
- The core PFAS compounds were not reported (i.e., below the laboratory LOR) at SW4.

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 field duplicates ranged from 0 to 21% which is within the acceptable %RPD for duplicate samples.

- No PFAS compounds were detected above the laboratory LOR in the field blank samples, the trip blank samples or the equipment rinsate blanks. This is with the exception of trip blank GWKAT which reported a minor detection of 6:2 FTS of 0.0019 µg/L. The trip blank is a laboratory prepared sample which remains unopened during sampling and travels to the laboratory with the primary samples. This is just above the LOR of 0.001 µg/L and no other compounds were detected. The reason for the detection is unknown, however due to the very low concentration, the fact no other compounds were detected and that all other blank samples were < LOR, this result is not considered to affect the reliability of the primary results.
- 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 March 2022 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 WS1 have increased slightly compared to previous rounds and are the highest recorded since sampling began at this location (sampled seven times in total since 2018).
- Concentrations of the core PFAS compounds at MW6 remain at similar levels to those recorded in the October 2021 monitoring round after the historical low recorded in the March 2021 monitoring.
- At MW9, concentrations of the core PFAS compounds remain at a similar level to those recorded in March and October 2021.
- Concentrations of the core PFAS compounds at GW6 have increased since the October 2021 monitoring round but remain well below the historical high concentrations measured in 2017 and 2018.
- At WS2 and MW4, concentrations of the core PFAS compounds remain within their historical ranges.
- This was the third monitoring round at GW111.1 and GW111.3 and the fourth round at GW111.2. PFAS was recorded in GW111.1 and GW111.3:
  - The Sum of Total PFOS + PFHxS in GW111.1 (0.29 µg/L) has decreased compared to the October 2021 monitoring round.
  - This is the second consecutive monitoring round that the Sum of Total PFOS + PFHxS has been reported above the LOR in GW111.3. The concentrations are very low, close to the LOR and similar to the concentration detected in October 2021. As noted previously, this is unexpected and a reason for the detection of PFAS at this location remains unknown. As this is the second time the Sum of Total PFOS + PFHxS has been reported at this location at a similar concentration, it is considered unlikely the results are due to sampling errors. Further sample results are necessary before an assessment can be made of whether the results are representative of the aquifer.

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 third monitoring round at GW112.1 and GW112.2.
  - Similar to the October 2021 monitoring round, the core PFAS compounds were reported above the LOR (Sum of Total PFOS + PFHxS of 0.48 µg/L, total PFOS of 0.18 µg/L and PFOA of 0.093 µg/L) in the shallow well GW112.1 (screened from 3.5 to 9.5 m bgl). This remains in general agreement 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.
  - Similar to the October 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, however the current results report 6:2FTS below the LOR.
  - Following similar sample results for GW112.1 and GW112.2 in October 2021 and March 2022, 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 at GW106 and GW109.
- At GW108, a PFBA concentration of 0.002 µg/L was detected in the March 2022 monitoring round. PFBA was also detected at GW108 in March 2021 at a concentration of 0.0011 µg/L. Both these results a very low and only slightly above the LOR of 0.001 µg/L. The PFAS plume (as Sum of Total PFOS + PFHxS) is modelled to reach GW108 in the future and it is possible that the detection of PFBA is an indicator of the leading edge of the plume, or there may be another source separate from the main PFAS plume.

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 were detected in samples from 2018, however they have not been reported above the LOR in any of the samples collected since.

A comparison of the sampling results to the PFAS groundwater model (PDP, 2019) developed for the area continues to show relatively good agreement. In particular, the March 2022 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 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 GW111.3 for the second consecutive monitoring round. This result is 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. Additionally, PFBA was detected at a low concentration in GW108 for the second time and it is possible that this is the beginning of the PFAS plume encroaching this site, as predicted by the model.

4.1.3 Transect

A comparison of select PFAS concentrations along a transect running northeast – southwest from the Base to GW106 has been undertaken. This direction generally follows the predicted shallow groundwater flow path[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 four rounds of sampling are shown (note that there are only three rounds of data for GW106, GW111.1 and GW112.1). As expected, the plot shows the concentration of the sum of PFOS + PFHxS generally decreases with distance away from the Base.

4.2 Surface Water

A comparison of the concentration of total PFOS over time at select surface water sampling locations is provided on Figure 3B.

The concentrations of the core PFAS compounds in the sample collected from SW33 in March 2022 have decreased from those reported during the March and October 2021 monitoring rounds.

Low concentrations of the core PFAS compounds continue to be measured at SW36, after concentrations were reported above the laboratory LOR for the first time in March 2021.

The core PFAS compounds were below the laboratory LOR at SW4, the upgradient sample location. Detections of the core PFAS compounds above the laboratory LOR have only been reported in one monitoring round (March 2021) when the sample was collected from a stagnant pool. All samples collected when the stream has been flowing have been below the laboratory LOR.

The concentration of core PFAS compounds in SW6 is similar to that collected in October 2021 and within historical ranges for this location.

The results from the March 2022 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 28 and 30 March 2022 in accordance with the RNZAF Base Ohakea PFAS Investigation: Long Term Monitoring Plan (PDP, 2020a). Nineteen groundwater and four surface water samples were collected from locations on, and adjacent to the base. In summary:

- Similar to the October 2021 monitoring round, PFAS has been detected at concentrations above the guideline values in seven groundwater samples collected in March 2022:
  - 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 exceeds the ANZECC guideline value for 90% species protection.

[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.

A comparison of the March 2022 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 March 2022 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 not reported in the deeper well. Sum of Total PFOS + PFHxS was reported above the LOR in the deep well, GW111.3. The concentrations are very low and similar to the result reported in the October 2021 monitoring round. This result is 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. Additionally, PFBA was detected at low a concentration in GW108 for the second time and it is possible that this is the beginning of the PFAS plume encroaching this site, as predicted by the model. Further sampling as scheduled in the LTMP will help to determine if these results are indicative of the advancement of the plume.

No changes to the LTMP are recommended at this time.

6.0 References

DoH, 2017. *Final Health Based Guidance Values for PFAS for use in site investigations in Australia.* The Department of Health, Australian Government, Canberra, Australia. Sourced 15/05/2017 https://www.health.gov.au/internet/main/publishing.nsf/Content/2200FE086D480353CA2580C900817CDC/$File/fs-Health-Based-Guidance-Values.pdf

EPA, 2016. *Lifetime Health Advisories and Health Effects Support Documents for Perfluorooctanoic Acid and Perfluorooctane Sulfonate*. United States Environmental Protection Agency, Washington, DC. May 25, 2016 https://www.epa.gov/sites/production/files/2016-05/documents/2016-12361.pdf

HEPA, 2018. *PFAS National Environmental Management Plan*. Heads of EPAs Australia and New Zealand, January 2018.

MDH, 2017. *Minnesota Department of Health 2015 Human Health Based Water Guidance Table*. MDH, Mankato, MN. 2017. Sourced 15/05/2017 http://www.health.state.mn.us/divs/eh/risk/guidance/hrltype.html#hrls2015

NIWA, 2007. *Statistical Analysis of River Flow Data in the Horizons Region*. Report prepared for Horizons Manawatu Regional Council by National Institute of Water & Atmospheric Research Ltd, May 2007.

PDP, 2017. *RNZAF Base Ohakea: Surface Water and Groundwater Monitoring for PFAS, July/August 2017*. Report prepared for New Zealand Defence Force, October 2017.

PDP, 2018. *Sampling and Analysis Plan for Polyfluorinated Compounds at RNZAF Ohakea* (updated February 2018). Report prepared for New Zealand Defence Force, February 2018.

PDP, 2019. *RNZAF Base Ohakea PFAS Investigation: Comprehensive Site Investigation Report.* Pattle Delamore Partners (2019).

PDP, 2020a. *RNZAF Base Ohakea PFAS Investigation: Long Term Monitoring Plan (LTMP).* Pattle Delamore Partners (2020).

PDP, 2020b. *Ohakea: Surface Water and Groundwater Monitoring For PFAS, October 2020.* Pattle Delamore Partners (2020).

PDP, 2021. *Ohakea: Surface Water and Groundwater Monitoring For PFAS, March 2021.* Pattle Delamore Partners (2021).

PDP, 2022. *Ohakea: Surface Water and Groundwater Monitoring For PFAS, October 2021.* Pattle Delamore Partners (2022).

WA DER, 2017. *Interim Guidelines on the Assessment and Management of Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) Contaminated Site Guidelines.* Department of Environment Regulation, Perth, Western Australia. Updated January 2017. Sourced 16/06/2017 https://www.der.wa.gov.au/images/documents/your-environment/contaminated-sites/guidelines/Guideline-on-Assessment-and-Management-of-PFAS-.pdf

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.

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

Yours faithfully

PATTLE DELAMORE PARTNERS LIMITED

Prepared by

Tom Harvey

Environmental Geologist

Reviewed by

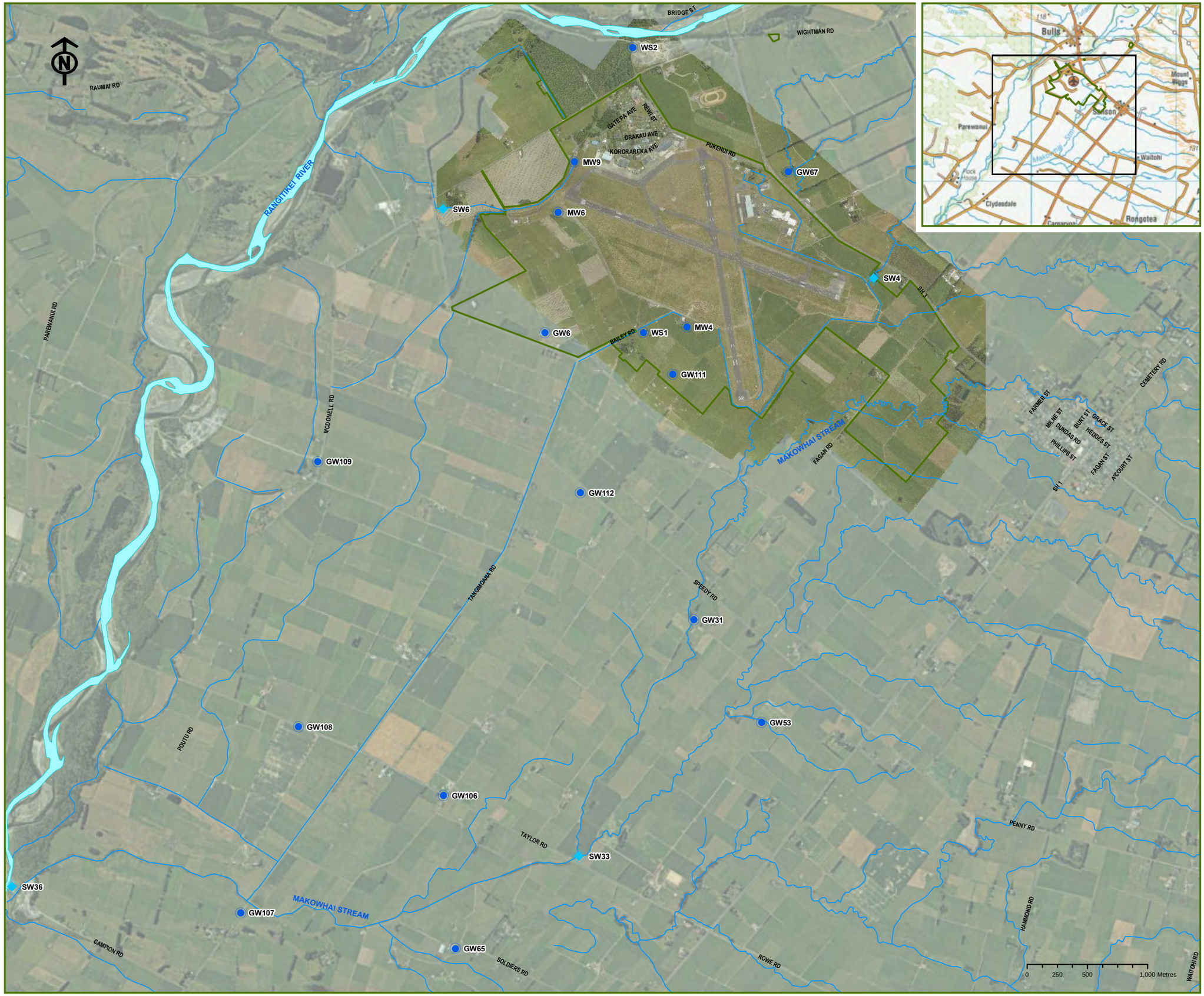
James Conway

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 2019 supplied by NZDF, and 2020-2021 provided by LINZ.
Cadastral andTopographic information supplied by LINZ.

NO.	REVISION HISTORY	DATE
B	FINAL	FEB 2023
A	ISSUED FOR REVIEW	JUN 2022

PROJECT NAME:

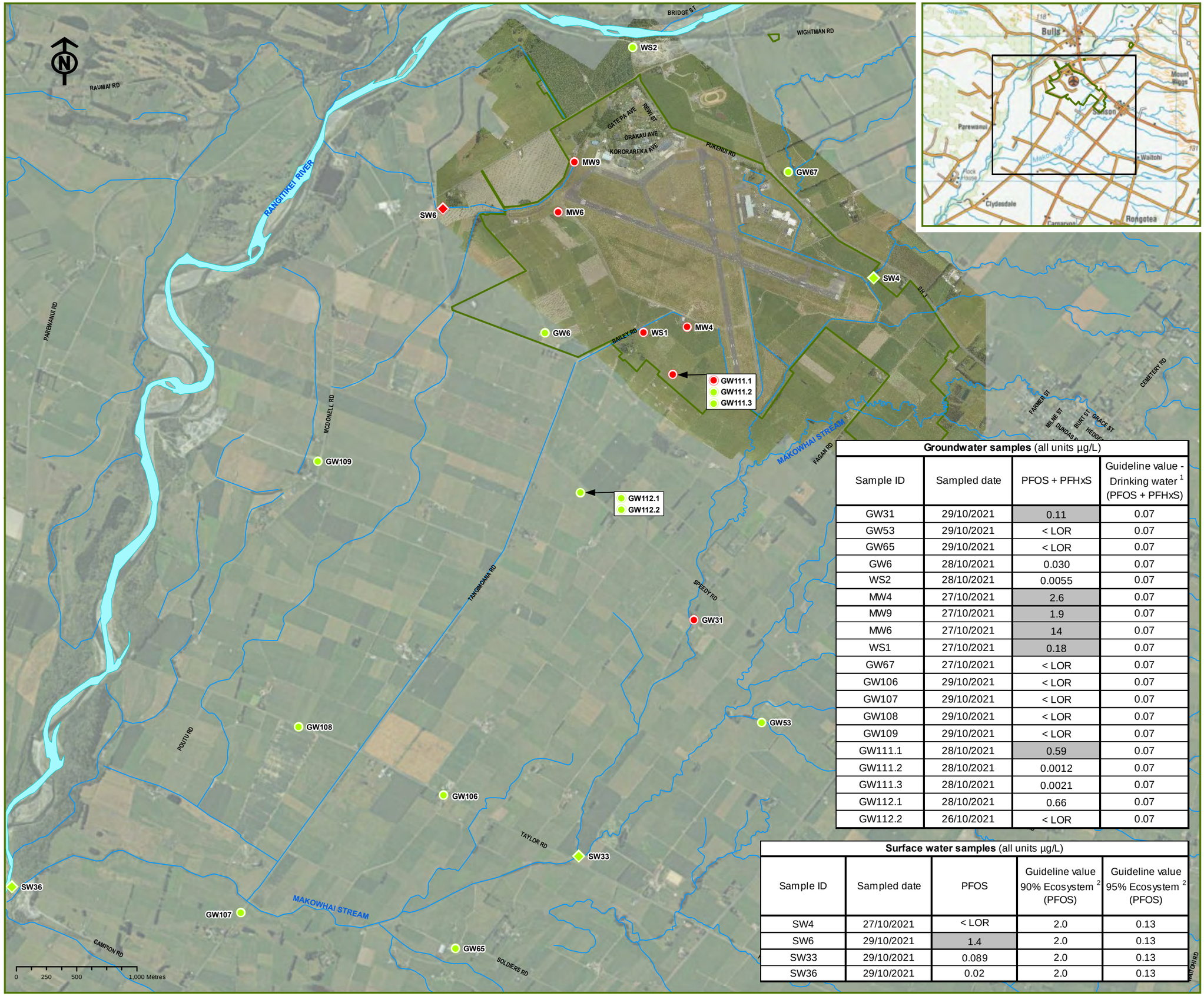
RNZAF BASE OHAKEA
PFAS INVESTIGATION:
LONG TERM
MONITORING PLAN

FIGURE TITLE:

SAMPLE LOCATION PLAN:
MARCH 2022

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

A027441187006_SampleLocationPlan_Mar22



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 2019 supplied by NZDF, and 2020-2021 provided by LINZ.
Cadastral andTopographic information supplied by LINZ.

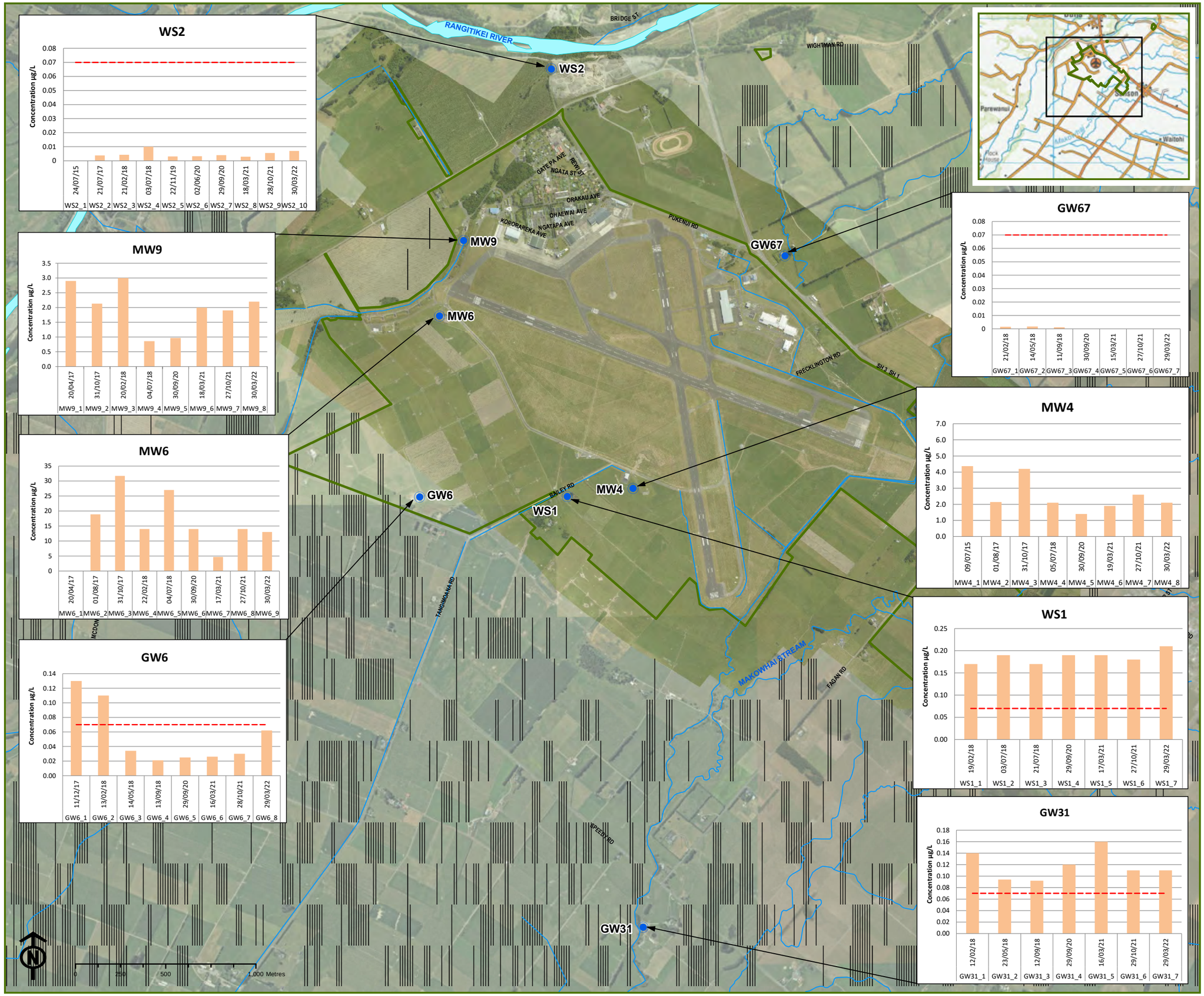
NO.	REVISION HISTORY	DATE
B	FINAL	FEB 2023
A	ISSUED FOR REVIEW	JUN 2022

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

FIGURE TITLE:
SAMPLE EXCEEDENCES MARCH 2022

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

A02744118Z007_SampleExceedences_Mar22



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 2020-2021 provided by LINZ.
Cadastral andTopographic information supplied by LINZ.

NO.	REVISION HISTORY	DATE
B	FINAL	FEB 2023
A	ISSUED FOR REVIEW	JUN 2022

PROJECT NAME:

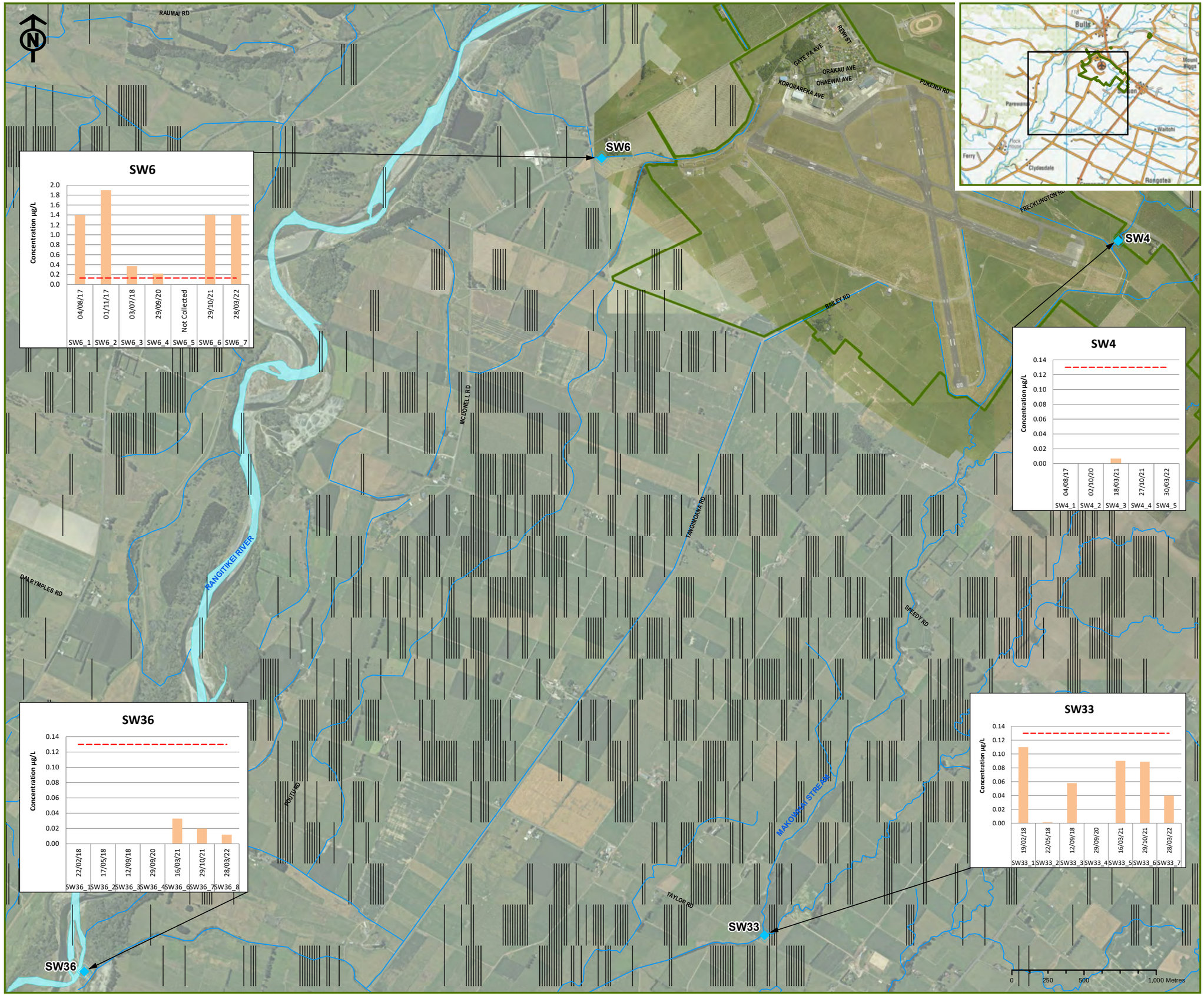
RNZAF BASE OHAKEA
PFAS INVESTIGATION:
LONG TERM
MONITORING PLAN

FIGURE TITLE:

GROUNDWATER:
CONCENTRATIONS OF
PFOS+PFHXS OVER TIME
FOR SELECT LOCATIONS:
MARCH 2022

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

A02744118Z008_Time_Series_GW_Mar22



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% 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 2020-2021 provided by LINZ.
Cadastral andTopographic information supplied by LINZ.

NO.	REVISION HISTORY	DATE
B	FINAL	FEB 2023
A	ISSUED FOR REVIEW	DEC 2022

PROJECT NAME:

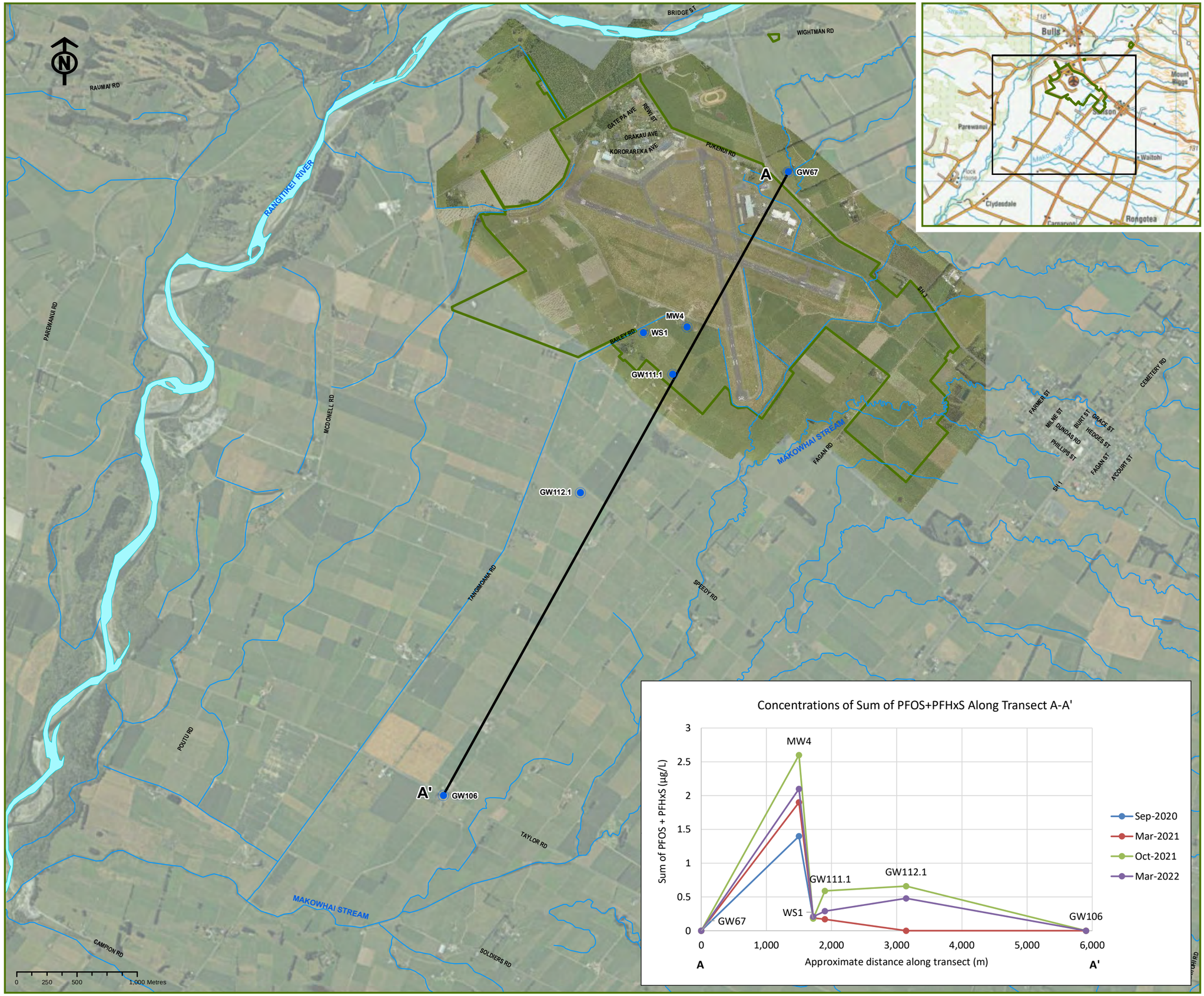
RNZAF BASE OHAKEA
PFAS INVESTIGATION:
LONG TERM
MONITORING PLAN

FIGURE TITLE:

SURFACE WATER:
CONCENTRATIONS OF
PFOS OVER TIME
FOR SELECT LOCATIONS:
MARCH 2022

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

A02744118Z009_Time_Series_SW_Mar22_1



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 2020-2021 provided by LINZ.
Cadastral andTopographic information supplied by LINZ.

NO.	REVISION HISTORY	DATE
B	FINAL	FEB 2023
A	ISSUED FOR REVIEW	JUN 2022

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

A02744118Z010_Transect_Mar22

Appendix A: Laboratory Reports

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

Petra Wedlake
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 12-Apr-2022 **AsureQuality Reference: 22-86009** **Sample(s) Received:** 29-Mar-2022 08:00

Testing Period: 29-Mar-2022 to 12-Apr-2022
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_SW36_8_280322 **Lab ID:** 22-86009-1

Sample Condition: Acceptable **Sampled Date**: 28-Mar-2022

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	0.0016	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.0015	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.0022	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.012	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.014	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)	0.0061	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.0058	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.012	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.026	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	0.013	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.024	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.018	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.0073	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.0031	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0011	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)

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	98	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	100	%	AsureQuality Method (LC-MS/MS)
M8PFOS	93	%	AsureQuality Method (LC-MS/MS)
M4PFBA	57	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	80	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	88	%	AsureQuality Method (LC-MS/MS)
MPFHpA	102	%	AsureQuality Method (LC-MS/MS)
M8PFOA	97	%	AsureQuality Method (LC-MS/MS)
M9PFNA	92	%	AsureQuality Method (LC-MS/MS)
M6PFDA	81	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	90	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	99	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	81	%	AsureQuality Method (LC-MS/MS)
MPFOSA	84	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	52	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	72	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	80	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	92	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	65	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	79	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	298 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	160 (R)	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	96	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-86009-1

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)

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	111	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	124	%	AsureQuality Method (LC-MS/MS)
M8PFOS	117	%	AsureQuality Method (LC-MS/MS)
M4PFBA	112	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	116	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	119	%	AsureQuality Method (LC-MS/MS)
MPFHpA	118	%	AsureQuality Method (LC-MS/MS)
M8PFOA	120	%	AsureQuality Method (LC-MS/MS)
M9PFNA	120	%	AsureQuality Method (LC-MS/MS)
M6PFDA	116	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	116	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	98	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	50	%	AsureQuality Method (LC-MS/MS)
MPFOSA	97	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	41	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	59	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	113	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	58	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	66	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	109	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	119	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	111	%	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

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

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

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

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

Petra Wedlake
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 12-Apr-2022 **AsureQuality Reference: 22-86044** **Sample(s) Received:** 29-Mar-2022 08:00

Testing Period: 29-Mar-2022 to 12-Apr-2022
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_SW33_7_280322 **Lab ID:** 22-86044-1

Sample Condition: Acceptable **Sampled Date**: 28-Mar-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.0018	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0037	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.0040	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.0058	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.033	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.039	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0013	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.019	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.020	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.040	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.079	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	0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.085	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.061	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.024	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0033	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)

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	0.0022	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
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	99	%	AsureQuality Method (LC-MS/MS)
M8PFOS	95	%	AsureQuality Method (LC-MS/MS)
M4PFBA	58	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	76	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	84	%	AsureQuality Method (LC-MS/MS)
MPFHpA	97	%	AsureQuality Method (LC-MS/MS)
M8PFOA	97	%	AsureQuality Method (LC-MS/MS)
M9PFNA	95	%	AsureQuality Method (LC-MS/MS)
M6PFDA	83	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	74	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	79	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	116	%	AsureQuality Method (LC-MS/MS)
MPFOSA	86	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	87	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	79	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	89	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	80	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	73	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	309 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	142	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	110	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	95	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-86044-1

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)

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	111	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	124	%	AsureQuality Method (LC-MS/MS)
M8PFOS	117	%	AsureQuality Method (LC-MS/MS)
M4PFBA	112	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	116	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	119	%	AsureQuality Method (LC-MS/MS)
MPFHpA	118	%	AsureQuality Method (LC-MS/MS)
M8PFOA	120	%	AsureQuality Method (LC-MS/MS)
M9PFNA	120	%	AsureQuality Method (LC-MS/MS)
M6PFDA	116	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	116	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	98	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	50	%	AsureQuality Method (LC-MS/MS)
MPFOSA	97	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	41	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	59	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	113	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	58	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	66	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	109	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	119	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	111	%	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

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

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

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

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

Petra Wedlake
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 12-Apr-2022 **AsureQuality Reference: 22-86054** **Sample(s) Received:** 29-Mar-2022 08:00

Testing Period: 29-Mar-2022 to 12-Apr-2022
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_DPB_SW6_7_280322 **Lab ID:** 22-86054-1

Sample Condition: Acceptable **Sampled Date**: 28-Mar-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.029	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.063	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.092	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	0.0021	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.16	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.95	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	1.1	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.050	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.051	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.64	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.69	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	1.4	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	2.5	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	0.22	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.86	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.62	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.31	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.36	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.17	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	0.0014	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	0.0011	µg/L	AsureQuality Method (LC-MS/MS)

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	0.44	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)	0.0022	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	0.0050	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	91	%	AsureQuality Method (LC-MS/MS)
M8PFOS	85	%	AsureQuality Method (LC-MS/MS)
M4PFBA	75	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	84	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	87	%	AsureQuality Method (LC-MS/MS)
MPFHpA	90	%	AsureQuality Method (LC-MS/MS)
M8PFOA	83	%	AsureQuality Method (LC-MS/MS)
M9PFNA	74	%	AsureQuality Method (LC-MS/MS)
M6PFDA	78	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	73	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	65	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	62	%	AsureQuality Method (LC-MS/MS)
MPFOSA	65	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	34	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	45	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	61	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	71	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	46	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	54	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	235 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	122	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	101	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-86054-1

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)

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	111	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	124	%	AsureQuality Method (LC-MS/MS)
M8PFOS	117	%	AsureQuality Method (LC-MS/MS)
M4PFBA	112	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	116	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	119	%	AsureQuality Method (LC-MS/MS)
MPFHpA	118	%	AsureQuality Method (LC-MS/MS)
M8PFOA	120	%	AsureQuality Method (LC-MS/MS)
M9PFNA	120	%	AsureQuality Method (LC-MS/MS)
M6PFDA	116	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	116	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	98	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	50	%	AsureQuality Method (LC-MS/MS)
MPFOSA	97	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	41	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	59	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	113	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	58	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	66	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	109	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	119	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	111	%	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

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

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

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

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

Petra Wedlake
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 12-Apr-2022 **AsureQuality Reference: 22-86062** **Sample(s) Received:** 29-Mar-2022 08:00

Testing Period: 29-Mar-2022 to 12-Apr-2022
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW112.2_3_280322 **Lab ID:** 22-86062-1

Sample Condition: Acceptable **Sampled Date**: 28-Mar-2022

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)

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<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	106	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	114	%	AsureQuality Method (LC-MS/MS)
M8PFOS	89	%	AsureQuality Method (LC-MS/MS)
M4PFBA	102	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	104	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	103	%	AsureQuality Method (LC-MS/MS)
MPFHpA	104	%	AsureQuality Method (LC-MS/MS)
M8PFOA	103	%	AsureQuality Method (LC-MS/MS)
M9PFNA	93	%	AsureQuality Method (LC-MS/MS)
M6PFDA	75	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	59	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	34	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	0 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	74	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	23 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	39	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	43	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	56	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	36	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	49	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	118	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	112	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	102	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: Dupl. of 22-86062-1 **Lab ID:** 22-86062-2

Sample Description: 18700066_Duplicate

Sample Condition: Acceptable **Sampled Date**: 28-Mar-2022

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	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<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)

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	<0.0010	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	94	%	AsureQuality Method (LC-MS/MS)
M4PFBA	96	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	99	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	104	%	AsureQuality Method (LC-MS/MS)
MPFHpA	101	%	AsureQuality Method (LC-MS/MS)
M8PFOA	102	%	AsureQuality Method (LC-MS/MS)
M9PFNA	100	%	AsureQuality Method (LC-MS/MS)
M6PFDA	87	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	75	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	60	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	0 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	82	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	28 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	45	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	53	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	68	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	51	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	55	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	110	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	114	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-86062-1, 22-86062-2

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	<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)

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	111	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	124	%	AsureQuality Method (LC-MS/MS)
M8PFOS	117	%	AsureQuality Method (LC-MS/MS)
M4PFBA	112	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	116	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	119	%	AsureQuality Method (LC-MS/MS)
MPFHpA	118	%	AsureQuality Method (LC-MS/MS)
M8PFOA	120	%	AsureQuality Method (LC-MS/MS)
M9PFNA	120	%	AsureQuality Method (LC-MS/MS)
M6PFDA	116	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	116	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	98	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	50	%	AsureQuality Method (LC-MS/MS)
MPFOSA	97	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	41	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	59	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	113	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	58	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	66	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	109	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	119	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	111	%	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

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	NR µg/L
NMeFOSA-M	0.0010 µg/L
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 µg/L
NMeFOSAA	0.0010 µg/L
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	0.0010 µg/L
NMeFOSE-M	0.0010 µg/L
Telomere Sulfonic acids	
4:2 FTS	0.0010 µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

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

Analyte Definitions

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

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear 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

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

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

Petra Wedlake
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 05-Apr-2022 **AsureQuality Reference: 22-87244** **Sample(s) Received:** 30-Mar-2022 08:00

Testing Period: 30-Mar-2022 to 05-Apr-2022
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GWKAQ_1_290322 **Lab ID:** 22-87244-1

Sample Condition: Acceptable **Sampled Date**: 29-Mar-2022

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	<0.0020	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)

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	101	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	95	%	AsureQuality Method (LC-MS/MS)
M8PFOS	99	%	AsureQuality Method (LC-MS/MS)
M4PFBA	97	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	101	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	94	%	AsureQuality Method (LC-MS/MS)
MPFHpA	97	%	AsureQuality Method (LC-MS/MS)
M8PFOA	96	%	AsureQuality Method (LC-MS/MS)
M9PFNA	93	%	AsureQuality Method (LC-MS/MS)
M6PFDA	108	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	114	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	123	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	160 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	101	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	90	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	116	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	95	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	102	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	89	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	108	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	89	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: OHA_ADJ_GWKAR_1_290322 **Lab ID:** 22-87244-2

Sample Condition: Acceptable **Sampled Date**: 29-Mar-2022

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	<0.0020	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)

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	101	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	101	%	AsureQuality Method (LC-MS/MS)
M8PFOS	113	%	AsureQuality Method (LC-MS/MS)
M4PFBA	95	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	92	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	103	%	AsureQuality Method (LC-MS/MS)
M6PFDA	116	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	131	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	130	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	91	%	AsureQuality Method (LC-MS/MS)
MPFOSA	116	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	92	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	115	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	107	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	103	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	114	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	110	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	100	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_ADJ_GWKAS_1_290322 **Lab ID:** 22-87244-3

Sample Condition: Acceptable **Sampled Date**: 29-Mar-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.0047	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0095	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.0088	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
mono-PFHxS (1)	0.013	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.060	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.073	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0016	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0027	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.028	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.017	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.048	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.12	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	0.047	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.14	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.041	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.017	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0044	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	0.0042	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)

Test	Result	Unit	Method Reference
Internal Standards			
M3PFBS	100	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	97	%	AsureQuality Method (LC-MS/MS)
M8PFOS	97	%	AsureQuality Method (LC-MS/MS)
M4PFBA	73	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	92	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	91	%	AsureQuality Method (LC-MS/MS)
MPFHpA	91	%	AsureQuality Method (LC-MS/MS)
M8PFOA	90	%	AsureQuality Method (LC-MS/MS)
M9PFNA	95	%	AsureQuality Method (LC-MS/MS)
M6PFDA	106	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	96	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	94	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	90	%	AsureQuality Method (LC-MS/MS)
MPFOSA	121	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	88	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	93	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	93	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	80	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	91	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	139	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	106	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	85	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_ADJ_GWKAX_1_290322 **Lab ID:** 22-87244-4

Sample Condition: Acceptable **Sampled Date**: 29-Mar-2022

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	<0.0020	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

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	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	97	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	101	%	AsureQuality Method (LC-MS/MS)
M8PFOS	106	%	AsureQuality Method (LC-MS/MS)
M4PFBA	97	%	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	95	%	AsureQuality Method (LC-MS/MS)
M9PFNA	103	%	AsureQuality Method (LC-MS/MS)
M6PFDA	121	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	108	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	175 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	201 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	120	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
DNEtFOSA	148	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	126	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	119	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	115	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	155 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	123	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	89	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	92	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-87244-1, 22-87244-2, 22-87244-3, 22-87244-4

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	<0.0020	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)
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	99	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	102	%	AsureQuality Method (LC-MS/MS)
M8PFOS	98	%	AsureQuality Method (LC-MS/MS)
M4PFBA	99	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	101	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	97	%	AsureQuality Method (LC-MS/MS)
MPFHpA	99	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	102	%	AsureQuality Method (LC-MS/MS)
M6PFDA	99	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	95	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	125	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	180 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	107	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	101	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	99	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	111	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	110	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	95	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M8:2FTS	96	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	122	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

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

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

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

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

Petra Wedlake
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 05-Apr-2022 **AsureQuality Reference: 22-87310** **Sample(s) Received:** 30-Mar-2022 08:00

Testing Period: 30-Mar-2022 to 05-Apr-2022
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_FTA_WS1_7_290322 **Lab ID:** 22-87310-1

Sample Condition: Acceptable **Sampled Date**: 29-Mar-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.014	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.027	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.028	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.034	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.14	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.17	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0030	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0032	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.025	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.013	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.041	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.21	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	0.023	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.11	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.098	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.035	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.028	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0084	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)

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	0.0012	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.13	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	107	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	99	%	AsureQuality Method (LC-MS/MS)
M8PFOS	102	%	AsureQuality Method (LC-MS/MS)
M4PFBA	94	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	103	%	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	96	%	AsureQuality Method (LC-MS/MS)
M6PFDA	103	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	96	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	83	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	106	%	AsureQuality Method (LC-MS/MS)
MPFOSA	93	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	43	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	57	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	80	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	82	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	50	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	54	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	131	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	93	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: Dupl. of 22-87310-1 **Lab ID:** 22-87310-2

Sample Description: 18711873_Duplicate

Sample Condition: Acceptable **Sampled Date**: 29-Mar-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.014	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.027	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.026	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.035	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.14	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.18	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0028	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0028	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.021	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.012	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.036	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.22	µg/L	AsureQuality Method (LC-MS/MS)
PFNS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFECHS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluoroalkylcarboxylic acids			
PFBA	0.023	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.11	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.035	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.026	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0075	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)

Test	Result	Unit	Method Reference
Telomere Sulfonic acids			
4:2 FTS	0.0011	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.13	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	85	%	AsureQuality Method (LC-MS/MS)
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)
M4PFBA	85	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	95	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	89	%	AsureQuality Method (LC-MS/MS)
MPFHpA	90	%	AsureQuality Method (LC-MS/MS)
M8PFOA	86	%	AsureQuality Method (LC-MS/MS)
M9PFNA	95	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	109	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	141	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	210 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	110	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	130	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	129	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	99	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	125	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	107	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	80	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-87310-1, 22-87310-2

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)

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	<0.0020	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)

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	99	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	102	%	AsureQuality Method (LC-MS/MS)
M8PFOS	98	%	AsureQuality Method (LC-MS/MS)
M4PFBA	99	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	101	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	97	%	AsureQuality Method (LC-MS/MS)
MPFHpA	99	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	102	%	AsureQuality Method (LC-MS/MS)
M6PFDA	99	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	95	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	125	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	180 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	107	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	101	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	99	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	111	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	110	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	96	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	122	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

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

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

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

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

Petra Wedlake
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 08-Apr-2022 **AsureQuality Reference: 22-87371** **Sample(s) Received:** 30-Mar-2022 08:00

Testing Period: 30-Mar-2022 to 08-Apr-2022
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW6_8_290322 **Lab ID:** 22-87371-1

Sample Condition: Acceptable **Sampled Date**: 29-Mar-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	NR	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0021	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.0042	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.0040	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.027	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.031	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0014	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.014	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.017	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.031	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.062	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	0.018	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.017	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.0091	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.0088	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0033	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)

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	<0.0010	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	86	%	AsureQuality Method (LC-MS/MS)
M8PFOS	97	%	AsureQuality Method (LC-MS/MS)
M4PFBA	24 (R)	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	45	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	44	%	AsureQuality Method (LC-MS/MS)
MPFHpA	52	%	AsureQuality Method (LC-MS/MS)
M8PFOA	56	%	AsureQuality Method (LC-MS/MS)
M9PFNA	67	%	AsureQuality Method (LC-MS/MS)
M6PFDA	86	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	106	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	74	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	132	%	AsureQuality Method (LC-MS/MS)
MPFOSA	61	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	67	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	78	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	84	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	78	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	68	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	94	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	326 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	155 (R)	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	174 (R)	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	31	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-87371-1

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	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	<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	104	%	AsureQuality Method (LC-MS/MS)
M8PFOS	108	%	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	103	%	AsureQuality Method (LC-MS/MS)
M8PFOA	107	%	AsureQuality Method (LC-MS/MS)
M9PFNA	107	%	AsureQuality Method (LC-MS/MS)
M6PFDA	110	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	118	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	74	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	55	%	AsureQuality Method (LC-MS/MS)
MPFOSA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	41	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	53	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	53	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	70	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	101	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	108	%	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

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	NR 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	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

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

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

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

Petra Wedlake
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 08-Apr-2022 **AsureQuality Reference: 22-87386** **Sample(s) Received:** 30-Mar-2022 08:00

Testing Period: 30-Mar-2022 to 08-Apr-2022
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW108_4_290322 **Lab ID:** 22-87386-1

Sample Condition: Acceptable **Sampled Date**: 29-Mar-2022

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	0.0020	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)

Test	Result	Unit	Method Reference
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	NR	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	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	106	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	117	%	AsureQuality Method (LC-MS/MS)
M8PFOS	113	%	AsureQuality Method (LC-MS/MS)
M4PFBA	67	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	87	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	103	%	AsureQuality Method (LC-MS/MS)
MPFHpA	119	%	AsureQuality Method (LC-MS/MS)
M8PFOA	112	%	AsureQuality Method (LC-MS/MS)
M9PFNA	107	%	AsureQuality Method (LC-MS/MS)
M6PFDA	107	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	105	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	71	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	37	%	AsureQuality Method (LC-MS/MS)
MPFOSA	81	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	17 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	27 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	80	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	87	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	35	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	52	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	280 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	134	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	104	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	89	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-87386-1

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	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	<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	104	%	AsureQuality Method (LC-MS/MS)
M8PFOS	108	%	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	103	%	AsureQuality Method (LC-MS/MS)
M8PFOA	107	%	AsureQuality Method (LC-MS/MS)
M9PFNA	107	%	AsureQuality Method (LC-MS/MS)
M6PFDA	110	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	118	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	74	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	55	%	AsureQuality Method (LC-MS/MS)
MPFOSA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	41	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	53	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	53	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	70	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	101	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	108	%	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

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	NR µg/L
NMeFOSA-M	NR µg/L
Perfluorooctanesulfonamidoacetic acids	
NEtFOSAA	0.0010 µg/L
NMeFOSAA	0.0010 µg/L
Perfluorooctanesulfonamidoethanols	
NEtFOSE-M	0.0010 µg/L
NMeFOSE-M	0.0010 µg/L
Telomere Sulfonic acids	
4:2 FTS	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

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

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

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

Petra Wedlake
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 08-Apr-2022 **AsureQuality Reference: 22-87399** **Sample(s) Received:** 30-Mar-2022 08:00

Testing Period: 30-Mar-2022 to 08-Apr-2022
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW109_4_290322 **Lab ID:** 22-87399-1

Sample Condition: Acceptable **Sampled Date**: 29-Mar-2022

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)

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	98	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	100	%	AsureQuality Method (LC-MS/MS)
M8PFOS	101	%	AsureQuality Method (LC-MS/MS)
M4PFBA	90	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	94	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	93	%	AsureQuality Method (LC-MS/MS)
MPFHpA	99	%	AsureQuality Method (LC-MS/MS)
M8PFOA	100	%	AsureQuality Method (LC-MS/MS)
M9PFNA	97	%	AsureQuality Method (LC-MS/MS)
M6PFDA	101	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	114	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	93	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	215 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	125	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	122	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	91	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	92	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	112	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	105	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	116	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	92	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	89	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-87399-1

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	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	<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	104	%	AsureQuality Method (LC-MS/MS)
M8PFOS	108	%	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	103	%	AsureQuality Method (LC-MS/MS)
M8PFOA	107	%	AsureQuality Method (LC-MS/MS)
M9PFNA	107	%	AsureQuality Method (LC-MS/MS)
M6PFDA	110	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	118	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	74	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	55	%	AsureQuality Method (LC-MS/MS)
MPFOSA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	41	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	53	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	53	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	70	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	101	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	108	%	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

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	0.0010 µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

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

Analyte Definitions

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

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear 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

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

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

Petra Wedlake
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 08-Apr-2022 **AsureQuality Reference: 22-87474** **Sample(s) Received:** 30-Mar-2022 08:00

Testing Period: 30-Mar-2022 to 08-Apr-2022
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW106_3_290322 **Lab ID:** 22-87474-1

Sample Condition: Acceptable **Sampled Date**: 29-Mar-2022

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)

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	105	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	115	%	AsureQuality Method (LC-MS/MS)
M8PFOS	103	%	AsureQuality Method (LC-MS/MS)
M4PFBA	75	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	92	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)
MPFHpA	107	%	AsureQuality Method (LC-MS/MS)
M8PFOA	111	%	AsureQuality Method (LC-MS/MS)
M9PFNA	107	%	AsureQuality Method (LC-MS/MS)
M6PFDA	98	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	95	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	74	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	90	%	AsureQuality Method (LC-MS/MS)
MPFOSA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	55	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	63	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	82	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	88	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	72	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	88	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	163 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	116	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	98	%	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) 22-87474-1

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	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	<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	104	%	AsureQuality Method (LC-MS/MS)
M8PFOS	108	%	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	103	%	AsureQuality Method (LC-MS/MS)
M8PFOA	107	%	AsureQuality Method (LC-MS/MS)
M9PFNA	107	%	AsureQuality Method (LC-MS/MS)
M6PFDA	110	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	118	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	74	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	55	%	AsureQuality Method (LC-MS/MS)
MPFOSA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	41	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	53	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	53	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	70	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	101	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	108	%	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

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	0.0010 µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

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

Analyte Definitions

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

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear 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

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

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

Petra Wedlake
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 08-Apr-2022 **AsureQuality Reference: 22-87488** **Sample(s) Received:** 30-Mar-2022 08:00

Testing Period: 30-Mar-2022 to 08-Apr-2022
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW53_7_290322 **Lab ID:** 22-87488-1

Sample Condition: Acceptable **Sampled Date**: 29-Mar-2022

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)

Test	Result	Unit	Method Reference
PFDoDA	NR	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	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	NR	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<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	107	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	109	%	AsureQuality Method (LC-MS/MS)
M8PFOS	95	%	AsureQuality Method (LC-MS/MS)
M4PFBA	109	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	109	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	110	%	AsureQuality Method (LC-MS/MS)
MPFHpA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	115	%	AsureQuality Method (LC-MS/MS)
M9PFNA	102	%	AsureQuality Method (LC-MS/MS)
M6PFDA	87	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	61	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	28 (R)	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	28 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	78	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	32	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	44	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	50	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	66	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	40	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	52	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	121	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	123	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	84	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	92	%	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) 22-87488-1

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	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	105	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	104	%	AsureQuality Method (LC-MS/MS)
M8PFOS	108	%	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	103	%	AsureQuality Method (LC-MS/MS)
M8PFOA	107	%	AsureQuality Method (LC-MS/MS)
M9PFNA	107	%	AsureQuality Method (LC-MS/MS)
M6PFDA	110	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	118	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	74	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	55	%	AsureQuality Method (LC-MS/MS)
MPFOSA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	41	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	53	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	53	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	70	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	101	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	108	%	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

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	NR 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	NR µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

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

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

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

Petra Wedlake
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 08-Apr-2022 **AsureQuality Reference: 22-87505** **Sample(s) Received:** 30-Mar-2022 08:00

Testing Period: 30-Mar-2022 to 08-Apr-2022
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADA_GW65_7_290322 **Lab ID:** 22-87505-1

Sample Condition: Acceptable **Sampled Date**: 29-Mar-2022

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)

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	107	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	104	%	AsureQuality Method (LC-MS/MS)
M8PFOS	106	%	AsureQuality Method (LC-MS/MS)
M4PFBA	105	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	109	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	112	%	AsureQuality Method (LC-MS/MS)
MPFHpA	117	%	AsureQuality Method (LC-MS/MS)
M8PFOA	110	%	AsureQuality Method (LC-MS/MS)
M9PFNA	106	%	AsureQuality Method (LC-MS/MS)
M6PFDA	98	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	85	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	52	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	42	%	AsureQuality Method (LC-MS/MS)
MPFOSA	96	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	42	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	59	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	71	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	80	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	65	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	74	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	128	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	99	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 22-87505-1

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	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	105	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	104	%	AsureQuality Method (LC-MS/MS)
M8PFOS	108	%	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	103	%	AsureQuality Method (LC-MS/MS)
M8PFOA	107	%	AsureQuality Method (LC-MS/MS)
M9PFNA	107	%	AsureQuality Method (LC-MS/MS)
M6PFDA	110	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	118	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	74	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	55	%	AsureQuality Method (LC-MS/MS)
MPFOSA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	41	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	53	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	53	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	70	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	101	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	108	%	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

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	0.0010 µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

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

Analyte Definitions

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

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear 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

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

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

Petra Wedlake
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 08-Apr-2022 **AsureQuality Reference: 22-87511** **Sample(s) Received:** 30-Mar-2022 08:00

Testing Period: 30-Mar-2022 to 08-Apr-2022
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW67_7_290322 **Lab ID:** 22-87511-1

Sample Condition: Acceptable **Sampled Date**: 29-Mar-2022

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	0.0087	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)

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	<0.0010	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	109	%	AsureQuality Method (LC-MS/MS)
M8PFOS	105	%	AsureQuality Method (LC-MS/MS)
M4PFBA	40	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	62	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	73	%	AsureQuality Method (LC-MS/MS)
MPFHpA	96	%	AsureQuality Method (LC-MS/MS)
M8PFOA	97	%	AsureQuality Method (LC-MS/MS)
M9PFNA	110	%	AsureQuality Method (LC-MS/MS)
M6PFDA	88	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	92	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	84	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	112	%	AsureQuality Method (LC-MS/MS)
MPFOSA	85	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	38	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	52	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	79	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	86	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	70	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	90	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	290 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	163 (R)	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	109	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	55	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: Dupl. of 22-87511-1A **Lab ID:** 22-87511-2

Sample Description: 18713304_Duplicate

Sample Condition: Acceptable **Sampled Date**: 29-Mar-2022

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	0.0084	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	NR	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<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)

Test	Result	Unit	Method Reference
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	104	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	122	%	AsureQuality Method (LC-MS/MS)
M8PFOS	115	%	AsureQuality Method (LC-MS/MS)
M4PFBA	40	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	62	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	75	%	AsureQuality Method (LC-MS/MS)
MPFHpA	100	%	AsureQuality Method (LC-MS/MS)
M8PFOA	105	%	AsureQuality Method (LC-MS/MS)
M9PFNA	112	%	AsureQuality Method (LC-MS/MS)
M6PFDA	96	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	102	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	69	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	46	%	AsureQuality Method (LC-MS/MS)
MPFOSA	74	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	15 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	22 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	76	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	84	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	32	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	64	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	314 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	183 (R)	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	116	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	52	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-87511-1, 22-87511-2

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	<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)

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	105	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	104	%	AsureQuality Method (LC-MS/MS)
M8PFOS	108	%	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	103	%	AsureQuality Method (LC-MS/MS)
M8PFOA	107	%	AsureQuality Method (LC-MS/MS)
M9PFNA	107	%	AsureQuality Method (LC-MS/MS)
M6PFDA	110	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	118	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	74	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	55	%	AsureQuality Method (LC-MS/MS)
MPFOSA	95	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	41	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	53	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	53	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	70	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	101	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	108	%	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

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

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

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

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: 02744119
Final Report

Petra Wedlake
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 12-Apr-2022 **AsureQuality Reference: 22-87518** **Sample(s) Received:** 30-Mar-2022 08:00

Testing Period: 30-Mar-2022 to 12-Apr-2022
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW112.1_3_290322 **Lab ID:** 22-87518-1

Sample Condition: Acceptable

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	0.028	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.028	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.045	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	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.088	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.094	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.18	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.48	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	<0.20	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.42	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.34	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.16	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.093	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.026	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)

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	0.11	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	111	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	110	%	AsureQuality Method (LC-MS/MS)
M8PFOS	104	%	AsureQuality Method (LC-MS/MS)
M4PFBA	104	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	110	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	112	%	AsureQuality Method (LC-MS/MS)
MPFHpA	113	%	AsureQuality Method (LC-MS/MS)
M8PFOA	109	%	AsureQuality Method (LC-MS/MS)
M9PFNA	112	%	AsureQuality Method (LC-MS/MS)
M6PFDA	109	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	106	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	103	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	92	%	AsureQuality Method (LC-MS/MS)
MPFOSA	109	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	117	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	120	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	100	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	96	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	112	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	110	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	109	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	102	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: Dupl. of 22-87518-1A **Lab ID:** 22-87518-2

Sample Description: 18713337_Duplicate

Sample Condition: Acceptable

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	0.029	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.030	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.047	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	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.096	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.11	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.21	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.52	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	<0.20	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.41	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.36	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.17	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.095	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.030	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
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)

Test	Result	Unit	Method Reference
Telomere Sulfonic acids			
4:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.11	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	102	%	AsureQuality Method (LC-MS/MS)
M8PFOS	105	%	AsureQuality Method (LC-MS/MS)
M4PFBA	92	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	97	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	94	%	AsureQuality Method (LC-MS/MS)
MPFHpA	97	%	AsureQuality Method (LC-MS/MS)
M8PFOA	99	%	AsureQuality Method (LC-MS/MS)
M9PFNA	101	%	AsureQuality Method (LC-MS/MS)
M6PFDA	103	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	105	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	102	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	94	%	AsureQuality Method (LC-MS/MS)
MPFOSA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	110	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	109	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	98	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	101	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	107	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	105	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	98	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 22-87518-1, 22-87518-2

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)
PFBS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
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	<0.20	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
PFDoDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTrDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFTeDA	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
P37DMOA	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamides			
PFOSA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NEtFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSA-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoacetic acids			
NEtFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSAA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)

Miscellaneous			
F-53B (major)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	101	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	99	%	AsureQuality Method (LC-MS/MS)
M8PFOS	103	%	AsureQuality Method (LC-MS/MS)
M4PFBA	102	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)
MPFHpA	98	%	AsureQuality Method (LC-MS/MS)
M8PFOA	103	%	AsureQuality Method (LC-MS/MS)
M9PFNA	102	%	AsureQuality Method (LC-MS/MS)
M6PFDA	101	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	107	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	104	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	87	%	AsureQuality Method (LC-MS/MS)
MPFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	98	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	114	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	109	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	96	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	95	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	101	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	92	%	AsureQuality Method (LC-MS/MS)

Analysis Summary

Wellington Laboratory

Analysis	Method	Accreditation	Authorised by
Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level			
DX-PFCS01, 05-HIGHLEVEL	AsureQuality Method (LC-MS/MS)	IANZ	Amelie Sellier

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

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

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

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

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

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

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

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

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

Sum F-53B = The numerical sum of 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

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

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

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

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

Petra Wedlake
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 13-Apr-2022 **AsureQuality Reference: 22-87586** **Sample(s) Received:** 30-Mar-2022 08:00

Testing Period: 30-Mar-2022 to 13-Apr-2022
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW31_7_290322 **Lab ID:** 22-87586-1

Sample Condition: Acceptable **Sampled Date**: 29-Mar-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.0046	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0095	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.0085	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)	0.058	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.071	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0013	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.024	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.015	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.042	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	0.047	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.15	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.10	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.036	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.017	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.0041	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)

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	0.0038	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	106	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	102	%	AsureQuality Method (LC-MS/MS)
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)
M4PFBA	78	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	95	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	100	%	AsureQuality Method (LC-MS/MS)
MPFHpA	113	%	AsureQuality Method (LC-MS/MS)
M8PFOA	102	%	AsureQuality Method (LC-MS/MS)
M9PFNA	100	%	AsureQuality Method (LC-MS/MS)
M6PFDA	95	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	77	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	64	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	23 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	85	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	49	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	55	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	79	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	84	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	49	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	76	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	157 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	125	%	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) 22-87586-1

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)

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	104	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	99	%	AsureQuality Method (LC-MS/MS)
M8PFOS	101	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	105	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	102	%	AsureQuality Method (LC-MS/MS)
MPFHpA	102	%	AsureQuality Method (LC-MS/MS)
M8PFOA	105	%	AsureQuality Method (LC-MS/MS)
M9PFNA	96	%	AsureQuality Method (LC-MS/MS)
M6PFDA	99	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	78	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	72	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	37	%	AsureQuality Method (LC-MS/MS)
MPFOSA	85	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	60	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	51	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	84	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	54	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	79	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	89	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	101	%	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

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	0.0010 µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

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

Analyte Definitions

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

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear 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

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

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

Petra Wedlake
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 13-Apr-2022 **AsureQuality Reference: 22-88672** **Sample(s) Received:** 31-Mar-2022 08:00

Testing Period: 31-Mar-2022 to 13-Apr-2022
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_QRY_WS2_12_300322 **Lab ID:** 22-88672-1

Sample Condition: Acceptable **Sampled Date**: 30-Mar-2022

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)	0.0037	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.0037	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)	0.0013	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.0020	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.0033	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.0070	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	0.0048	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.0052	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.0036	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.0019	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.0017	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)

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	103	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	99	%	AsureQuality Method (LC-MS/MS)
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)
M4PFBA	96	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	103	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	93	%	AsureQuality Method (LC-MS/MS)
MPFHpA	103	%	AsureQuality Method (LC-MS/MS)
M8PFOA	95	%	AsureQuality Method (LC-MS/MS)
M9PFNA	92	%	AsureQuality Method (LC-MS/MS)
M6PFDA	93	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	80	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	65	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	69	%	AsureQuality Method (LC-MS/MS)
MPFOSA	80	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	128	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	133	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	65	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	74	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	81	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	84	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	109	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	103	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	90	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 22-88672-1

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)
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	104	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	99	%	AsureQuality Method (LC-MS/MS)
M8PFOS	101	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	105	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	102	%	AsureQuality Method (LC-MS/MS)
MPFHpA	102	%	AsureQuality Method (LC-MS/MS)
M8PFOA	105	%	AsureQuality Method (LC-MS/MS)
M9PFNA	96	%	AsureQuality Method (LC-MS/MS)
M6PFDA	99	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	78	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	72	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	37	%	AsureQuality Method (LC-MS/MS)
MPFOSA	85	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	60	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	51	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	84	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	54	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	79	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	89	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	101	%	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

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	0.0010 µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

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

Analyte Definitions

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

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear 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

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

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

Petra Wedlake
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 13-Apr-2022 **AsureQuality Reference: 22-88699** **Sample(s) Received:** 31-Mar-2022 08:00

Testing Period: 31-Mar-2022 to 13-Apr-2022
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_DTK_MW9_8_300322 **Lab ID:** 22-88699-1

Sample Condition: Acceptable **Sampled Date**: 30-Mar-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.022	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.049	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.074	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	0.0015	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.14	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.89	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	1.0	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.042	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.049	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.55	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.59	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	1.2	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	2.2	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	0.59	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	2.1	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	1.1	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.56	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.51	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.28	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	0.0015	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)

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	0.0018	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	2.6	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	0.0043	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)	0.0032	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	79	%	AsureQuality Method (LC-MS/MS)
M8PFOS	91	%	AsureQuality Method (LC-MS/MS)
M4PFBA	58	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	66	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	76	%	AsureQuality Method (LC-MS/MS)
MPFHpA	85	%	AsureQuality Method (LC-MS/MS)
M8PFOA	73	%	AsureQuality Method (LC-MS/MS)
M9PFNA	75	%	AsureQuality Method (LC-MS/MS)
M6PFDA	90	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	82	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	121	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	118	%	AsureQuality Method (LC-MS/MS)
MPFOSA	85	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	165 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	194 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	89	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	86	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	144	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	129	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	200 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	142	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	71	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-88699-1

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)

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	104	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	99	%	AsureQuality Method (LC-MS/MS)
M8PFOS	101	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	105	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	102	%	AsureQuality Method (LC-MS/MS)
MPFHpA	102	%	AsureQuality Method (LC-MS/MS)
M8PFOA	105	%	AsureQuality Method (LC-MS/MS)
M9PFNA	96	%	AsureQuality Method (LC-MS/MS)
M6PFDA	99	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	78	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	72	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	37	%	AsureQuality Method (LC-MS/MS)
MPFOSA	85	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	60	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	51	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	84	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	54	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	79	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	89	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	101	%	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

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	0.0010 µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

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

Analyte Definitions

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

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear 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

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

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: 8 A02744118
Final Report

Petra Wedlake
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 14-Apr-2022 **AsureQuality Reference: 22-88707** **Sample(s) Received:** 31-Mar-2022 08:00

Testing Period: 31-Mar-2022 to 14-Apr-2022
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_RUP_MW6_9_300322 **Lab ID:** 22-88707-1

Sample Condition: Acceptable **Sampled Date**: 30-Mar-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Non Potable Water - High Level			
Perfluoroalkylsulfonic acids			
PFPrS	0.053	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.19	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.24	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.57	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	3.8	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	4.4	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.15	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.15	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	2.5	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	5.5	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	8.2	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	13	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	2.0	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	1.4	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.63	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.68	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.55	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)

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	0.78	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	108	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	107	%	AsureQuality Method (LC-MS/MS)
M8PFOS	107	%	AsureQuality Method (LC-MS/MS)
M4PFBA	105	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	102	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	105	%	AsureQuality Method (LC-MS/MS)
MPFHpA	109	%	AsureQuality Method (LC-MS/MS)
M8PFOA	109	%	AsureQuality Method (LC-MS/MS)
M9PFNA	124	%	AsureQuality Method (LC-MS/MS)
M6PFDA	111	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	109	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	106	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	98	%	AsureQuality Method (LC-MS/MS)
MPFOSA	110	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	112	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	101	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	106	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	117	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	110	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	110	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	125	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	113	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	105	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 22-88707-1

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)
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	104	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	99	%	AsureQuality Method (LC-MS/MS)
M8PFOS	101	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	105	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	102	%	AsureQuality Method (LC-MS/MS)
MPFHpA	102	%	AsureQuality Method (LC-MS/MS)
M8PFOA	105	%	AsureQuality Method (LC-MS/MS)
M9PFNA	96	%	AsureQuality Method (LC-MS/MS)
M6PFDA	99	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	78	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	72	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	37	%	AsureQuality Method (LC-MS/MS)
MPFOSA	85	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	60	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	51	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	84	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	54	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	79	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	89	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	101	%	AsureQuality Method (LC-MS/MS)

Blank

Relates to sample(s) 22-88707-1

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)
Perfluorooctanesulfonamidoethanols			
NEtFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
NMeFOSE-M	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Sulfonic acids			
4:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
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	112	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	113	%	AsureQuality Method (LC-MS/MS)
M8PFOS	110	%	AsureQuality Method (LC-MS/MS)
M4PFBA	112	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	115	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	111	%	AsureQuality Method (LC-MS/MS)
MPFHpA	113	%	AsureQuality Method (LC-MS/MS)
M8PFOA	116	%	AsureQuality Method (LC-MS/MS)
M9PFNA	123	%	AsureQuality Method (LC-MS/MS)
M6PFDA	113	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	101	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	107	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	88	%	AsureQuality Method (LC-MS/MS)
MPFOSA	115	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	105	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	108	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	107	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	108	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	113	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	108	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	117	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	135	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	128	%	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 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

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

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

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

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

Petra Wedlake
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 13-Apr-2022 **AsureQuality Reference: 22-88713** **Sample(s) Received:** 31-Mar-2022 08:00

Testing Period: 31-Mar-2022 to 13-Apr-2022
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_ADJ_GW107_3_300322 **Lab ID:** 22-88713-1

Sample Condition: Acceptable **Sampled Date**: 30-Mar-2022

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)

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	97	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	91	%	AsureQuality Method (LC-MS/MS)
M8PFOS	87	%	AsureQuality Method (LC-MS/MS)
M4PFBA	83	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	92	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	91	%	AsureQuality Method (LC-MS/MS)
MPFHpA	99	%	AsureQuality Method (LC-MS/MS)
M8PFOA	92	%	AsureQuality Method (LC-MS/MS)
M9PFNA	87	%	AsureQuality Method (LC-MS/MS)
M6PFDA	75	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	47	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	48	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	42	%	AsureQuality Method (LC-MS/MS)
MPFOSA	90	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	113	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	136	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	61	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	67	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	87	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	108	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	149	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	117	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	84	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	92	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 22-88713-1

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)
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	104	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	99	%	AsureQuality Method (LC-MS/MS)
M8PFOS	101	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	105	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	102	%	AsureQuality Method (LC-MS/MS)
MPFHpA	102	%	AsureQuality Method (LC-MS/MS)
M8PFOA	105	%	AsureQuality Method (LC-MS/MS)
M9PFNA	96	%	AsureQuality Method (LC-MS/MS)
M6PFDA	99	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	78	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	72	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	37	%	AsureQuality Method (LC-MS/MS)
MPFOSA	85	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	60	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	51	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	84	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	54	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	79	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	89	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	101	%	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

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	0.0010 µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

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

Analyte Definitions

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

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear 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

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

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

Petra Wedlake
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 13-Apr-2022 **AsureQuality Reference: 22-88730** **Sample(s) Received:** 31-Mar-2022 08:00

Testing Period: 31-Mar-2022 to 13-Apr-2022
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_SHW_SW4_5_300322 **Lab ID:** 22-88730-1

Sample Condition: Acceptable **Sampled Date**: 30-Mar-2022

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	0.0061	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.0013	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)

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	97	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	97	%	AsureQuality Method (LC-MS/MS)
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)
M4PFBA	56	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	77	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	83	%	AsureQuality Method (LC-MS/MS)
MPFHpA	102	%	AsureQuality Method (LC-MS/MS)
M8PFOA	94	%	AsureQuality Method (LC-MS/MS)
M9PFNA	93	%	AsureQuality Method (LC-MS/MS)
M6PFDA	82	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	63	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	88	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	163 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	72	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	155 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	155 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	75	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	76	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	95	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	87	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	282 (R)	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	174 (R)	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	105	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	70	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-88730-1

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)

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	104	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	99	%	AsureQuality Method (LC-MS/MS)
M8PFOS	101	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	105	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	102	%	AsureQuality Method (LC-MS/MS)
MPFHpA	102	%	AsureQuality Method (LC-MS/MS)
M8PFOA	105	%	AsureQuality Method (LC-MS/MS)
M9PFNA	96	%	AsureQuality Method (LC-MS/MS)
M6PFDA	99	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	78	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	72	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	37	%	AsureQuality Method (LC-MS/MS)
MPFOSA	85	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	60	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	51	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	84	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	54	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	79	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	89	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	101	%	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

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

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

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

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

Petra Wedlake
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 13-Apr-2022 **AsureQuality Reference: 22-88741** **Sample(s) Received:** 31-Mar-2022 08:00

Testing Period: 31-Mar-2022 to 13-Apr-2022
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_BAI_GW111.1_3_300322 **Lab ID:** 22-88741-1

Sample Condition: Acceptable **Sampled Date**: 30-Mar-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.0023	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0083	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)	0.012	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.076	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.088	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0022	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0036	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.061	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.14	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.20	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.29	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	0.079	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.26	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.20	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.092	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.064	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.017	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)

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	0.012	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	106	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	100	%	AsureQuality Method (LC-MS/MS)
M8PFOS	89	%	AsureQuality Method (LC-MS/MS)
M4PFBA	96	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	105	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	93	%	AsureQuality Method (LC-MS/MS)
MPFHpA	107	%	AsureQuality Method (LC-MS/MS)
M8PFOA	97	%	AsureQuality Method (LC-MS/MS)
M9PFNA	92	%	AsureQuality Method (LC-MS/MS)
M6PFDA	86	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	64	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	46	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	20 (R)	%	AsureQuality Method (LC-MS/MS)
MPFOSA	75	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	58	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	79	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	69	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	69	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	50	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	68	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	115	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	102	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	95	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	95	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: OHA_BAI_GW111.2_3_300322 **Lab ID:** 22-88741-2

Sample Condition: Acceptable **Sampled Date**: 30-Mar-2022

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	<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)

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	109	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	94	%	AsureQuality Method (LC-MS/MS)
M8PFOS	100	%	AsureQuality Method (LC-MS/MS)
M4PFBA	102	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	102	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	107	%	AsureQuality Method (LC-MS/MS)
MPFHpA	110	%	AsureQuality Method (LC-MS/MS)
M8PFOA	102	%	AsureQuality Method (LC-MS/MS)
M9PFNA	97	%	AsureQuality Method (LC-MS/MS)
M6PFDA	93	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	63	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	43	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	52	%	AsureQuality Method (LC-MS/MS)
MPFOSA	74	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	28 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	39	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	40	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	52	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	34	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	37	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	135	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	114	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	97	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

Customer Sample Name: OHA_BAI_GW111.3_3_300322 **Lab ID:** 22-88741-3

Sample Condition: Acceptable **Sampled Date**: 30-Mar-2022

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)

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)	0.0027	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.0027	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.0027	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	<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)

Test	Result	Unit	Method Reference
HFPO-DA (GenX)	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	108	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	107	%	AsureQuality Method (LC-MS/MS)
M8PFOS	97	%	AsureQuality Method (LC-MS/MS)
M4PFBA	104	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	98	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	109	%	AsureQuality Method (LC-MS/MS)
MPFHpA	104	%	AsureQuality Method (LC-MS/MS)
M8PFOA	105	%	AsureQuality Method (LC-MS/MS)
M9PFNA	99	%	AsureQuality Method (LC-MS/MS)
M6PFDA	89	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	65	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	62	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	66	%	AsureQuality Method (LC-MS/MS)
MPFOSA	89	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	56	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	58	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	71	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	76	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	60	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	65	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	119	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	132	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	85	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	134	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: Dupl. of 22-88741-1A **Lab ID:** 22-88741-4

Sample Description: 18723333_Duplicate

Sample Condition: Acceptable **Sampled Date**: 30-Mar-2022

Test	Result	Unit	Method Reference
Poly- and Perfluorinated Alkyl Substances (PFAS) in Potable Water			
Perfluoroalkylsulfonic acids			
PFPrS	0.0022	µg/L	AsureQuality Method (LC-MS/MS)
PFBS	0.0081	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.0082	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)	0.078	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.090	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	0.0022	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.0033	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.054	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.12	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	0.18	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	0.27	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)

Test	Result	Unit	Method Reference
Perfluoroalkylcarboxylic acids			
PFBA	0.079	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.26	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.19	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.094	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.060	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.015	µg/L	AsureQuality Method (LC-MS/MS)
PFDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
PFUnDA	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
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	0.012	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	89	%	AsureQuality Method (LC-MS/MS)
M8PFOS	89	%	AsureQuality Method (LC-MS/MS)
M4PFBA	87	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	92	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	88	%	AsureQuality Method (LC-MS/MS)
MPFHpA	93	%	AsureQuality Method (LC-MS/MS)
M8PFOA	94	%	AsureQuality Method (LC-MS/MS)
M9PFNA	88	%	AsureQuality Method (LC-MS/MS)
M6PFDA	96	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	78	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
MPFDoDA	77	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	78	%	AsureQuality Method (LC-MS/MS)
MPFOSA	97	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	162 (R)	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	167 (R)	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	85	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	86	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	108	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	125	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	109	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	89	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	92	%	AsureQuality Method (LC-MS/MS)

R = Recovery outside method limits

QC Results

Blank

Relates to sample(s) 22-88741-1, 22-88741-4

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)

Test	Result	Unit	Method Reference
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	104	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	99	%	AsureQuality Method (LC-MS/MS)
M8PFOS	101	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	105	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	102	%	AsureQuality Method (LC-MS/MS)
MPFHpA	102	%	AsureQuality Method (LC-MS/MS)
M8PFOA	105	%	AsureQuality Method (LC-MS/MS)
M9PFNA	96	%	AsureQuality Method (LC-MS/MS)
M6PFDA	99	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	78	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	72	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	37	%	AsureQuality Method (LC-MS/MS)
MPFOSA	85	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	60	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	51	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	84	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	94	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
DNEtFOSE	54	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	79	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	97	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	89	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	101	%	AsureQuality Method (LC-MS/MS)

Blank

Relates to sample(s) 22-88741-2, 22-88741-3

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	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	<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	104	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	105	%	AsureQuality Method (LC-MS/MS)
M8PFOS	98	%	AsureQuality Method (LC-MS/MS)
M4PFBA	102	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	103	%	AsureQuality Method (LC-MS/MS)
MPFHpA	107	%	AsureQuality Method (LC-MS/MS)
M8PFOA	102	%	AsureQuality Method (LC-MS/MS)
M9PFNA	99	%	AsureQuality Method (LC-MS/MS)
M6PFDA	99	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	101	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	95	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	109	%	AsureQuality Method (LC-MS/MS)
MPFOSA	96	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	80	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	77	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	98	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	73	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	78	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	106	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	95	%	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

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	0.0010 µg/L
6:2 FTS	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L
FPePA (5:3FTA)	0.0010 µg/L

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

Analyte Definitions

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

Analyte	Full Name
Perfluoroalkylsulfonic acids	
PFPrS	Perfluoro-1-propanesulfonic acid
PFBS	Perfluoro-1-butanesulfonic acid
PFPeS	Perfluoro-1-pentanesulfonic acid
di-PFHxS (1)	Total Perfluorodimethylbutane sulfonic acids
mono-PFHxS (1)	Total Perfluoromethylpentane sulfonic acids
L-PFHxS (1)	Linear Perfluorohexanesulfonic acid
PFHpS	Perfluoro-1-heptanesulfonic acid
di-PFOS (5)	Total Perfluorodimethylhexane sulfonic acids
mono-PFOS (5)	Total Perfluoromethylheptane sulfonic acids
L-PFOS (5)	Linear 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

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

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

Petra Wedlake
Pattle Delamore Partners Limited
P O Box 9528
Auckland 1149
New Zealand

PO Number: OHA_PFAS

Report Issued: 14-Apr-2022 **AsureQuality Reference: 22-88786** **Sample(s) Received:** 31-Mar-2022 08:00

Testing Period: 31-Mar-2022 to 14-Apr-2022
Date of analysis is available on request.

Results

The tests were performed on the samples as received.

Customer Sample Name: OHA_FTA_MW4_8_300322 **Lab ID:** 22-88786-1

Sample Condition: Acceptable **Sampled Date**: 30-Mar-2022

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	0.035	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.046	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.098	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.60	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.70	µg/L	AsureQuality Method (LC-MS/MS)
PFHpS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
di-PFOS (5)	0.026	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFOS (5)	0.49	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.90	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	1.4	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	2.1	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	0.21	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.87	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.60	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.33	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.29	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.17	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)

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	0.53	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	109	%	AsureQuality Method (LC-MS/MS)
M8PFOS	108	%	AsureQuality Method (LC-MS/MS)
M4PFBA	97	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	101	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	104	%	AsureQuality Method (LC-MS/MS)
MPFHpA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	113	%	AsureQuality Method (LC-MS/MS)
M9PFNA	114	%	AsureQuality Method (LC-MS/MS)
M6PFDA	112	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	113	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	101	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	104	%	AsureQuality Method (LC-MS/MS)
MPFOSA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	109	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	103	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	110	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	105	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M4:2FTS	109	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	123	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	112	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	90	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_ADJ_GWKAT_1_300322 **Lab ID:** 22-88786-2

Sample Condition: Acceptable **Sampled Date**: 30-Mar-2022

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	<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)

Test	Result	Unit	Method Reference
Telomere Sulfonic acids			
4:2 FTS	<0.0010	µg/L	AsureQuality Method (LC-MS/MS)
6:2 FTS	0.0019	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	92	%	AsureQuality Method (LC-MS/MS)
M8PFOS	73	%	AsureQuality Method (LC-MS/MS)
M4PFBA	98	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	102	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	98	%	AsureQuality Method (LC-MS/MS)
MPFHpA	96	%	AsureQuality Method (LC-MS/MS)
M8PFOA	93	%	AsureQuality Method (LC-MS/MS)
M9PFNA	82	%	AsureQuality Method (LC-MS/MS)
M6PFDA	72	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	52	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	32	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	31	%	AsureQuality Method (LC-MS/MS)
MPFOSA	90	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	50	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	52	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	52	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	62	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	43	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	59	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	66	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	89	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_ADJ_GWKAU_1_300322 **Lab ID:** 22-88786-3

Sample Condition: Acceptable **Sampled Date**: 30-Mar-2022

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	0.034	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.043	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
mono-PFHxS (1)	0.10	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.62	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.72	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)	0.52	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.94	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	1.5	µg/L	AsureQuality Method (LC-MS/MS)
Sum PFHxS+PFOS (1)	2.2	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	0.22	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.89	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.59	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.32	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.30	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.19	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	0.62	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)

Test	Result	Unit	Method Reference
Internal Standards			
M3PFBS	104	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	106	%	AsureQuality Method (LC-MS/MS)
M8PFOS	106	%	AsureQuality Method (LC-MS/MS)
M4PFBA	93	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	99	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	105	%	AsureQuality Method (LC-MS/MS)
MPFHpA	109	%	AsureQuality Method (LC-MS/MS)
M8PFOA	109	%	AsureQuality Method (LC-MS/MS)
M9PFNA	116	%	AsureQuality Method (LC-MS/MS)
M6PFDA	100	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	108	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	101	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	88	%	AsureQuality Method (LC-MS/MS)
MPFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	102	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	105	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	104	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	98	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	111	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	104	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	99	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	112	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	117	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	95	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_ADJ_GWKAV_1_300322 **Lab ID:** 22-88786-4

Sample Condition: Acceptable **Sampled Date**: 30-Mar-2022

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)

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	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	101	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	100	%	AsureQuality Method (LC-MS/MS)
M8PFOS	96	%	AsureQuality Method (LC-MS/MS)
M4PFBA	102	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	104	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	105	%	AsureQuality Method (LC-MS/MS)
MPFHpA	106	%	AsureQuality Method (LC-MS/MS)
M8PFOA	102	%	AsureQuality Method (LC-MS/MS)
M9PFNA	98	%	AsureQuality Method (LC-MS/MS)
M6PFDA	95	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	82	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	87	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	70	%	AsureQuality Method (LC-MS/MS)
MPFOSA	93	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
DNEtFOSA	73	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	78	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	98	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	86	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	63	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	67	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	93	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	111	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	75	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	99	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: OHA_ADJ_GWKAW_1_300322 **Lab ID:** 22-88786-5

Sample Condition: Acceptable **Sampled Date**: 30-Mar-2022

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	<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)

Test	Result	Unit	Method Reference
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	107	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	97	%	AsureQuality Method (LC-MS/MS)
M8PFOS	102	%	AsureQuality Method (LC-MS/MS)
M4PFBA	100	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	98	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	102	%	AsureQuality Method (LC-MS/MS)
MPFHpA	99	%	AsureQuality Method (LC-MS/MS)
M8PFOA	103	%	AsureQuality Method (LC-MS/MS)
M9PFNA	102	%	AsureQuality Method (LC-MS/MS)
M6PFDA	103	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	100	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	124	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	135	%	AsureQuality Method (LC-MS/MS)
MPFOSA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	91	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	80	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	107	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	99	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	101	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	82	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	109	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	89	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	102	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: Dupl. of 22-88786-5A **Lab ID:** 22-88786-6

Sample Description: 18724504_Duplicate

Sample Condition: Acceptable **Sampled Date**: 30-Mar-2022

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	<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)

Test	Result	Unit	Method Reference
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	77	%	AsureQuality Method (LC-MS/MS)
M8PFOS	82	%	AsureQuality Method (LC-MS/MS)
M4PFBA	84	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	84	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	84	%	AsureQuality Method (LC-MS/MS)
MPFHpA	85	%	AsureQuality Method (LC-MS/MS)
M8PFOA	82	%	AsureQuality Method (LC-MS/MS)
M9PFNA	86	%	AsureQuality Method (LC-MS/MS)
M6PFDA	80	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	62	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	72	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	78	%	AsureQuality Method (LC-MS/MS)
MPFOSA	83	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	65	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	61	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	72	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	78	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	59	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	65	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	85	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	79	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	72	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	86	%	AsureQuality Method (LC-MS/MS)

Customer Sample Name: Dupl. of 22-88786-3A **Lab ID:** 22-88786-7

Sample Description: 18724502_Duplicate

Sample Condition: Acceptable **Sampled Date**: 30-Mar-2022

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	0.037	µg/L	AsureQuality Method (LC-MS/MS)
PFPeS	0.045	µg/L	AsureQuality Method (LC-MS/MS)
di-PFHxS (1)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
mono-PFHxS (1)	0.097	µg/L	AsureQuality Method (LC-MS/MS)
L-PFHxS (1)	0.60	µg/L	AsureQuality Method (LC-MS/MS)
Total PFHxS (3)	0.70	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)	0.57	µg/L	AsureQuality Method (LC-MS/MS)
L-PFOS (5)	0.92	µg/L	AsureQuality Method (LC-MS/MS)
Total PFOS (7)	1.5	µg/L	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
Sum PFHxS+PFOS (1)	2.2	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	0.21	µg/L	AsureQuality Method (LC-MS/MS)
PFPeA	0.90	µg/L	AsureQuality Method (LC-MS/MS)
PFHxA	0.59	µg/L	AsureQuality Method (LC-MS/MS)
PFHpA	0.32	µg/L	AsureQuality Method (LC-MS/MS)
PFOA	0.31	µg/L	AsureQuality Method (LC-MS/MS)
PFNA	0.19	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	0.59	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	107	%	AsureQuality Method (LC-MS/MS)
M4PFBA	91	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	104	%	AsureQuality Method (LC-MS/MS)
MPFHpA	104	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
M8PFOA	104	%	AsureQuality Method (LC-MS/MS)
M9PFNA	111	%	AsureQuality Method (LC-MS/MS)
M6PFDA	102	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	104	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	101	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	87	%	AsureQuality Method (LC-MS/MS)
MPFOSA	106	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	106	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	109	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	96	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	104	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	107	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	100	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	106	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	121	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	114	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	88	%	AsureQuality Method (LC-MS/MS)

QC Results

Blank

Relates to sample(s) 22-88786-1, 22-88786-2, 22-88786-3, 22-88786-4, 22-88786-5, 22-88786-6

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)

Test	Result	Unit	Method Reference
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)
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	104	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	105	%	AsureQuality Method (LC-MS/MS)
M8PFOS	98	%	AsureQuality Method (LC-MS/MS)
M4PFBA	102	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	100	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	103	%	AsureQuality Method (LC-MS/MS)
MPFHpA	107	%	AsureQuality Method (LC-MS/MS)
M8PFOA	102	%	AsureQuality Method (LC-MS/MS)
M9PFNA	99	%	AsureQuality Method (LC-MS/MS)
M6PFDA	99	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	101	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	95	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	109	%	AsureQuality Method (LC-MS/MS)
MPFOSA	96	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	80	%	AsureQuality Method (LC-MS/MS)

Test	Result	Unit	Method Reference
DNMeFOSA	77	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	98	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	102	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	73	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	78	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	106	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	100	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	94	%	AsureQuality Method (LC-MS/MS)
M3HFPO-DA	95	%	AsureQuality Method (LC-MS/MS)

Blank

Relates to sample(s) 22-88786-1, 22-88786-3, 22-88786-7

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)
6:2 FTS	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
8:2 FTS	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
10:2 FTS	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Telomere Carboxylic acids			
FPrPA (3:3FTA)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
FPePA (5:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
FHpPA (7:3FTA)	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
Miscellaneous			
F-53B (major)	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
F-53B (minor)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Sum F-53B	<0.10	µg/L	AsureQuality Method (LC-MS/MS)
ADONA	<0.025	µg/L	AsureQuality Method (LC-MS/MS)
HFPO-DA (GenX)	<0.050	µg/L	AsureQuality Method (LC-MS/MS)
Internal Standards			
M3PFBS	112	%	AsureQuality Method (LC-MS/MS)
M3PFHxS	113	%	AsureQuality Method (LC-MS/MS)
M8PFOS	110	%	AsureQuality Method (LC-MS/MS)
M4PFBA	112	%	AsureQuality Method (LC-MS/MS)
M5PFPeA	115	%	AsureQuality Method (LC-MS/MS)
M5PFHxA	111	%	AsureQuality Method (LC-MS/MS)
MPFHpA	113	%	AsureQuality Method (LC-MS/MS)
M8PFOA	116	%	AsureQuality Method (LC-MS/MS)
M9PFNA	123	%	AsureQuality Method (LC-MS/MS)
M6PFDA	113	%	AsureQuality Method (LC-MS/MS)
M7PFUnDA	101	%	AsureQuality Method (LC-MS/MS)
MPFDoDA	107	%	AsureQuality Method (LC-MS/MS)
MPFTeDA	88	%	AsureQuality Method (LC-MS/MS)
MPFOSA	115	%	AsureQuality Method (LC-MS/MS)
DNEtFOSA	105	%	AsureQuality Method (LC-MS/MS)
DNMeFOSA	108	%	AsureQuality Method (LC-MS/MS)
DNEtFOSAA	107	%	AsureQuality Method (LC-MS/MS)
DNMeFOSAA	108	%	AsureQuality Method (LC-MS/MS)
DNEtFOSE	113	%	AsureQuality Method (LC-MS/MS)
DNMeFOSE	108	%	AsureQuality Method (LC-MS/MS)
M4:2FTS	117	%	AsureQuality Method (LC-MS/MS)
M6:2FTS	135	%	AsureQuality Method (LC-MS/MS)
M8:2FTS	128	%	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

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: 22-88786-2, 22-88786-4, 22-88786-5, 22-88786-6	
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	0.0010 µg/L
8:2 FTS	0.0010 µg/L
10:2 FTS	0.0010 µg/L
Telomere Carboxylic acids	
FPrPA (3:3FTA)	0.0010 µg/L

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

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

Analyte	LOR
Listing applies to samples: 22-88786-1, 22-88786-3, 22-88786-7	
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	

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: 22-88786-2, 22-88786-4, 22-88786-5, 22-88786-6	
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	

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: 22-88786-1, 22-88786-3, 22-88786-7	
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

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

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

Appendix B: GW Level Measurements

Appendix B: March 2022 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	**29/03/2022**	**30/03/2022**	**29/03/2022**			**30/03/2022**		
Depth to Water (m below ground level)	2.20	3.10	1.57	4.52	4.17	6.18	3.38	1.76
Water depth (m below TOC)	2.15	3.02	1.53	4.48	4.84	6.18	3.29	1.70

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	**30/03/2022**			**29/03/2022**	
Depth to Water (m below ground level)	6.28	8.22	5.85	0.80	0.37
Water depth (m below TOC)	6.76	8.71	6.35	1.35	1.45

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:

Weather:

Sample point: tap / well / surface water

Description of sample point: Bore

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~~ A0274411Y

Sample Code (Name): WS1

Date and time: 29/3/22

Coordinates (NZTM): E

N

Sampled By: Bryn (Clean hands)

Tom (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		1425		16.6	7.34	452.4		8.12		Murky
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: _____

Address: _____

Weather: _____

Sample point: tap / well / surface water

Description of sample point: Bore.

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~~ A0274418

Sample Code (Name): WS2

Date and time: 30.3.22

Coordinates: (NZTM) E _____ N _____

Sampled By: _____ (Clean hands) _____ (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				14.8	6.63	830		3.86		
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: NZDF

Address: Ohakea

Weather: Fine

Sample point: tap / well / surface water

Description of sample point: Main Army Well

Distance of sample point from bore: — (m)

Sampling equipment: Low Flow

QA/QA Sample Codes:

Duplicate: KAU

Trip Blank: KAT

Field Blank: KAV

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): MW4

Date and time: 30.3.22

Coordinates (NZTM): E

N

Sampled By: BT (Clean hands)

TH (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		0821	Cell	16.8	6.54	540	—	3.72	6.14	CL
During	5	0826	1.2	15.4	6.49	548	—	0.42	6.13	CL
During	10	0829	2.1	15.4	6.50	548	—	0.34	—	CL
During	11	0832	3.0	16.0	6.50	547	—	0.31	—	CL
During	14	0835	3.8	15.0	6.51	546	—	0.27	—	CL
During										
During										
During										
During										
During										
During										

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

Comments: DTW = 6.18 m
DTB = 9.90 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

9.9 x 30 + 250 = 547 ml
600ml sample train

Last year's measurement

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: Fine

Sample point: tap / well / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: Low flow

Job Number: ~~A02684802~~ A0274411S

Sample Code (Name): MW6

Date and time: 30.3.22

Coordinates (NZTM): E

N

Sampled By: BT (Clean hands)

TH (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

QA/QA Sample Codes:

Duplicate

Trip Blank

Field Blank

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

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

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

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		0900 Cell		18.6	6.53	192	–	6.51	3.31	CL
During	5	0907	1	18.6	6.16	183.2	✓	5.58	3.36	CL
During	6	0910	1.5	18.6	6.16	186.2	–	5.74	3.39	CL
During	11	0913	3	18.6	6.17	187	–	5.69	3.41	CL
During	14	0916	3.8	18.5	6.16	186.6	–	5.67	3.44	CL
During										
During										
During										
During										
During										
During										

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

Comments

DTW 3.29
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

4.42 x 30 + 250 = 382.6
400 ml sample train

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: Fine / Windy

Sample point: tap / well / surface water

Description of sample point: Monitoring Well

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~~ A02744118

Sample Code (Name): MW9

Date and time: 30.3.22

Coordinates (NZTM): E

N

Sampled By: (Clean hands)

(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	–	1027	–	19.0	6.00	307.5		2.58	1.73	clear, orange
During	6	1033	0.5	19.6	5.96	314.1		0.54	1.76	fine sand ppt
During	11	1038	1	19.6	5.96	311.8		0.38	1.79	
During	16	1043	1.5	19.6	5.96	310.2		0.39	1.81	
During	20	1047	2.0	19.7	5.96	312.4		0.35	1.84	
During										
During										
During										
During										
During										
During										

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

Comments DTW = 1.70 m
DTB = 4.46

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

4.45 x 30 + 250 = 383
400 ml sample train

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~~ A0274419

Sample Code (Name): GW6

Date and time: 29/3/22

Coordinates: (NZTM) E

N

Sampled By: TH (Clean hands)

BT (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	-	1349	-	16.8	6.64	349.9		2.18	4.63	Murky
During	3	1352	1	16.1	6.72	359.4		0.54	4.63	
During	6	1355	2	16.1	6.74	359.9		0.39	4.63	
During	9	1358	3.2	16.1	6.74	360.8		0.31	463	
During	12	1401	4.5	16.1	6.74	359.6		0.26	4.63	
During	15									
During										
During										
During										
During										
During										
During										

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

Comments

DTW 4.84
DTB 6.950

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

8m tubing x 30mL + 250mL = 490

Every L to be sent

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 Road

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 GWKAS

Trip Blank GWKAQ

Field Blank GWKAR

Rinsate Blank (include description of equipment cleaned e.g. dipper) ~~GWKAT~~ ~~Muddy water after GSUK~~

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

Job Number: ~~A02684802~~ A0276411 9

Sample Code (Name): GW31

Date and time: 29.3.22

Coordinates: (NZTM) E

N

Sampled By: TH BT (Clean hands)

BT ~~FH~~ (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		0949		18.2	6.86	539		7.92		Murky
During										
During										
During										
During										
During										
During										
During										
During										
During										
During										

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

Comments ~~GWKAQ~~

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

Sample collected from attached hose

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: Dasley

Address: SH

Weather: Fine / Cloudy

Sample point: tap / well / surface water

Description of sample point: Artesian well

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~~ A0274411 9

Sample Code (Name): GW53

Date and time: 29.3.22

Coordinates: (NZTM) E

N

Sampled By: TM (Clean hands)

BT (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	0817			14.0		752		4.21		
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:

Address: Soldiers Mound

Weather: Fine

Sample point: tap / well / surface water

Description of sample point: sampled from top of tank

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~~ A02744119

Sample Code (Name): GW65

Date and time: 29.3.22

Coordinates: (NZTM) E

N

Sampled By: TH (Clean hands)

BT (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		10.11	-	14.3	7.23	997	-	3.32	-	CL
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 Turn washdown pump switch on in case sheet.

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

Sample point: tap / well / surface water

Description of sample point: tap next to garage

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~~ A027444 | 1 8

Sample Code (Name): GWS7

Date and time: 29.3.22

Coordinates (NZTM): E

N

Sampled By: TH (Clean hands)

BT (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		0744	–	12.4	6.69	1446	–	3.54	–	CL
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: –

Address: Taylor Road

Weather: Fine / Cloudy

Sample point: tap / well / surface water

Description of sample point: Monitoring well

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) ~~CWK~~ – dipper

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

Job Number: ~~A02684802~~ A0274411 9

Sample Code (Name): CWW06

Date and time: 29/03/22

Coordinates (NZTM): E

N

Sampled By: ~~TH~~ BT (Clean hands)

~~BT~~ TH (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 neighbouring field

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	–	12:15	–	18.9	6.69	729		2.0	2.15	clear
During	3	12:18	0.5	17.5	6.35	714		0.51	2.15	
During	5	12:20	1	17.4	6.30	709		0.33	2.15	
During	7	12:22	1.5	17.4	6.30	709		0.30	2.15	
During	9	12:24	2.0	17.5	6.29	711		0.27	2.15	
During	11	12:26	2.5	17.5	6.29	711		0.24	2.15	
During										
During										
During										
During										
During										

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

Comments ~~CWK~~ = Rinsate
DTW = 2.15
DTB = ~~6.88~~ *

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

* From last year (6.88 × 30) + 250 = 456

Ground has subsided. Concrete around tobe loose. Well cap could not be put back on when lid was on. So taped well head over and left cap in PFAS container.

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: Tangimoana Road

Weather:

Sample point: tap / well / surface water

Description of sample point: Monitoring Well

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): GW107

Date and time: 30.3.22

Coordinates (NZTM): E

N

Sampled By: BT (Clean hands)

TH (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		0646	all	17.5	6.94	548	–	4.47	3.03	CL
During	5	0651	1L	15.4	6.94	658	–	0.55	3.03	CL
During	8	0654	2.1	15.6	6.93	662	–	0.34	–	CL
During	11	0657	3.1	15.5	6.94	667	–	0.33	–	CL
During	14	0700	4.2	15.3	6.95	670	–	0.28	–	CL
During	17	0703	5.2	15.3	6.99	671	–	0.26	–	CL
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 - 3.02
DTB = 10.74*
TOC = 0.07m bgl

10.74 x 30 = 250 = 572
600ml sample transy

* last years data

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 Road

Weather: Fine

Sample point: tap / well / surface water

Description of sample point: Monitoring Well

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~~ A02744114

Sample Code (Name): GW108

Date and time: 29.3.22

Coordinates (NZTM): E

N

Sampled By: RT (Clean hands)

TH (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		12.58	Cell	18.1	6.22	346	–	2.99	1.56	CL
During	5	1303	1	17.3	5.94	268.5	–	0.70	1.60	CL
During	8	1306	1.8	17.3	5.92	267.9	–	0.59	1.615	CL
During	11	1309	2.6	17.2	5.92	269.1	–	0.49	1.62	CL
During	14	1312	3.3	17.2	5.92	272.8	–	0.43	1.625	CL
During										
During										
During										
During										
During										
During										

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

Comments DTW = 1.525
DTB = 3.56 ✱

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

3.88 x 30 + 250 = 366
≈ 400ml sample train

✱ last round depth

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: Mt Dunmore Road

Weather:

Sample point: tap / well / surface water

Description of sample point: Monitoring Well

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 CA

Sample Code (Name): GW10 CA

Date and time: 24.3.22

Coordinates (NZTM): E

N

Sampled By: JT (Clean hands)

TH (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		10.46	Cell	17.6	6.66	417.4	–	2.22	4.48	CL
During	5	10.51	1.2	16.3	6.20	402.7	–	0.44	4.48	CL
During	8	10.54	2.4	16.2	6.18	402.5	–	0.34	–	CL
During	11	10.57	3.0	16.2	6.16	401.6	–	0.26	–	CL
During	14	11.00	3.9	16.2	6.16	400.8	–	0.26	–	CL
During										
During										
During										
During										
During										
During										

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

Comments DTW = 4.48
DTB = 7.83 m*
TOC = 0.16 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

7.83 x 30 = 235 + 454.9
Sample train = 690 mL

* Bypass has ceased requirement from last year

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: Fine

Sample point: tap / well / surface water

Description of sample point: Monitoring bell

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~~ A027-RM18

Sample Code (Name): MW11.1

Date and time: 30.3.22

Coordinates: (NZTM) E

N

Sampled By: (Clean hands)

(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		14.31	Cell	17.6	6.67	324.9	—	3.65	6.78	CL
During	5	14.36	1.2	18.2	6.17	308.4	—	1.41	6.74	CL
During	8	14.39	2.1	16.1	6.13	307.7	—	1.80	6.79	CL
During	11	14.42	3.0	16.0	6.11	307.8	—	1.73	—	CL
During	14	14.45	3.9	16.0	6.10	306.0	—	1.75	—	CL
During										
During										
During										
During										
During										
During										

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

Comments: DTW = 6.76
DTB = 11.50m

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

10 x 30 + 280 = 580

600ml trains

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: ~~Ohakea~~

Weather: Fine + breezy

Sample point: tap / well / surface water

Description of sample point: Monitoring Well

Distance of sample point from bore: – (m)

Sampling equipment: Solinst

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~~ 402744918

Sample Code (Name): GWIII.2

Date and time: 30.3.22

Coordinates: (NZTM) E

N

Sampled By: TH (Clean hands)

BT (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		13.56	Cell	16.0	8.74	700	–	3.37	8.73	CL
During	5	14.01	2	14.2	6.91	775	–	0.34	8.73	CL
During	8	14.04	3.5	14.2	6.81	779	–	0.26	–	CL
During	11	14.07	5	14.2	6.73	779	–	0.27	–	CL
During	14	14.10	6.5	14.2	6.61	770	–	0.30	–	CL
During	17	14.13	8	14.1	6.58	768	–	0.30	–	CL
During	20	14.16	9.5	14.2	6.53	763	–	0.29	–	CL
During			11							
During										
During										
During										

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

Comments DTW = 8.71 m
DTB = 37.5 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

37.5 x 30 + 250 = 1,375
1.5L sample train

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: Sunny

Sample point: tap / well / surface water

Description of sample point:

Distance of sample point from bore: (m)

Sampling equipment: Whale Solinst

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~~ A02744118

Sample Code (Name): RW11.3

Date and time: 30.3.22

Coordinates: (NZTM) E

N

Sampled By: TH (Clean hands)

BT (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)

$80 \times 30_{mL} = 2400_{mL} = 2.5L$

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		1322	-	15.4	8.01	718		1.85	6.35	
During	5	1327	2.5	14.6	7.71	784		0.34	6.34	50.45
During	12	1334	5	14.6	7.67	788		0.22	6.34	44.80
During	19	1341	7.5	14.4	7.64	797		0.17	6.34	
During		1346	10	14.5	7.60	807		0.15	6.34	
During										
During										
During										
During										
During										
During										

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

Comments DTB = 83.34 m
DTW = 6.35 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

2.75L per sample train.

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 Road

Weather:

Sample point: tap / well / surface water

Description of sample point: Mon. dung well

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~~ 702744119

Sample Code (Name): MW12.1

Date and time: 29.3.22

Coordinates (NZTM): E

N

Sampled By: BT (Clean hands)

TVT (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		14.48	Cell	17.2	6.46	468.8	—	1.69	1.36	CL
During	5	14.53	1.7	16.4	6.17	464	—	0.46	1.35	CL
During	8	14.56	2.8	16.4	6.15	457.6	—	0.30	—	CL
During	11	14.59	4.0	16.4	6.14	452	—	0.24	—	CL
During	14	15.02	5.2	16.4	6.14	445.1	—	0.21	—	CL
During										
During										
During										
During										
During										
During										

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

Comments DTW >1.35
DTB 10.345*

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

10.345 x 30 + 250 = 560

Some iron flowing stuff at start of purging 600ml sample train

* last year

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 Road

Weather: Cloudy / Windy

Sample point: tap / well / surface water

Description of sample point: Grw well

Distance of sample point from bore: (m)

Sampling equipment: Sdmpf

QA/QA Sample Codes:

Duplicate —

Trip Blank —

Field Blank —

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

Job Number: ~~A02684802~~ A0278418

Sample Code (Name): GWM2.2

Date and time: 28.3.22

Coordinates: (NZTM) E

N

Sampled By: BT (Clean hands)

TH (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)

30+50 = 1500 + 250 = 1.75L

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

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		1353	Cell	15,1	7.06	939	—	2.32	-*	CL
During	5	13.58	5 L	14.5	6.96	943	—	0.67	-	CL
During	10	14.03	7 L	14.4	6.92	926	—	0.47	-	CL
During	~~15~~	14.08	9 L	14.3	6.91	922	—	0.37	-	CL
During	~~1720~~	14.10	11 L	14.2	6.90	923	—	0.22	-	CL
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

DTW = 1.45
DTB = 53.7
* Dipper not working

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: Mighty gripper

QA/QA Sample Codes:

Duplicate

Trip Blank

Field Blank

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

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

Job Number: ~~A02684802~~ A0274418

Sample Code (Name): SW4

Date and time: 30.3.22

Coordinates: (NZTM) E

N

Sampled By: TH (Clean hands)

BT (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		1210		17.4		341.7		2.63		Murky 15.59
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: –

Address: –

Weather: Cloudy / Windy

Sample point: tap / well / surface water

Description of sample point: Culvert

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~~ A0274411 9

Sample Code (Name): SW6

Date and time: 28.3.22

Coordinates (NZTM): E

N

Sampled By: TH (Clean hands)

BT (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	–	15.23	–	15.6	6.82	257.4	–	0.75	–	CL
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:

Address:

Weather:

Job Number: ~~A02684802~~ A0274411

Sample Code (Name): SW33

Date and time: 28.3.22

Coordinates (NZTM): E

N

Sampled By: TH (Clean hands)

BT (Dirty hands)

Sample point: tap / well / surface water

Description of sample point: Stream

Distance of sample point from bore: – (m)

Sampling equipment: Mighty Gripper

Site Photos taken? ☐ Yes ☑ No

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

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

QA/QA Sample Codes:

Duplicate –

Trip Blank –

Field Blank –

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

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

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

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	–	16.05	–	17.2	~~8.00~~ 7.27	430.7	–	8.6	–	CL
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

Location field sheet completed? ☐ Yes ☐ N/A

Stabilisation criteria field sheet completed? ☐ Yes

Letter given to landowner? ☐ Yes

Well field sheet completed? ☐ Yes ☐ N/A

* = 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: Stream

Distance of sample point from bore: (m)

Sampling equipment: MightyGripper

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

Sample Code (Name): SW36

Date and time: 28/03/22

Coordinates: (NZTM) E

N

Sampled By: TH (Clean hands)

BT (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	1545			16.1	6.99	557		5.61		clear/sh.
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

Appendix D: QAQC Results

Table D-1: QA/QC Water Sampling Results - Per- and Poly-Fluoroalkyl Substances (PFAS) [1] Field Duplicates

Sample Location	GW31	GW31	**%RPD (GW31 and GWKAS)**	MW4	MW4	**%RPD (MW4 and GWKAU)**
Sample Name	OHA_ADJ_GW31_7_290322	OHA_ADJ_GWKAS_1_290322		OHA_FTA_MW4_8_300322	OHA_ADJ_GWKAU_1_300322	
Laboratory Reference	2786750	2775978		2788510	2788510	
Monitoring Zone	Off base	Off base		On base	On base	
Sampled Date	29/03/2022	29/03/2022		30/03/2022	30/03/2022	
PFPrS	0.0046	0.0047	2	<0.025	<0.025	0
PFBS	0.0095	0.0095	0	0.035	0.034	3
PFPeS	0.0085	0.0088	3	0.046	0.043	7
di-PFHxS	<0.001	<0.001	0	<0.025	<0.025	0
Mono-PFHxS	0.013	0.013	0	0.098	0.1	2
L-PFHxS	0.058	0.06	3	0.6	0.62	3
Total PFHxS	0.071	0.073	3	0.7	0.72	3
PFHpS	0.0013	0.0016	21	<0.025	<0.025	0
di-PFOS	0.0025	0.0027	8	0.026	0.03	14
Mono-PFOS	0.024	0.028	15	0.49	0.52	6
L-PFOS	0.015	0.017	13	0.9	0.94	4
Total PFOS	0.042	0.048	13	1.4	1.5	7
Sum of PFHxS and PFOS	0.11	0.12	9	2.1	2.2	5
PFECHS	<0.001	<0.001	0	<0.025	<0.025	0
PFBA	0.047	0.047	0	0.21	0.22	5
PFPeA	0.15	0.14	7	0.87	0.89	2
PFHxA	0.1	0.1	0	0.6	0.59	2
PFHpA	0.036	0.041	13	0.33	0.32	3
PFOA	0.017	0.017	0	0.29	0.3	3
PFNA	0.0041	0.0044	7	0.17	0.19	11
PFDA	<0.001	<0.001	0	<0.025	<0.025	0
PFUnDA	<0.001	<0.001	0	<0.025	<0.025	0
PFTrDA	<0.001	-	0	<0.1	<0.1	0
PFTeDA	-	<0.001	0	<0.1	<0.1	0
PFDoDA	<0.001	<0.001	0	<0.1	<0.1	0
FOSA	<0.001	<0.001	0	<0.025	<0.025	0
MeFOSA	<0.001	<0.001	0	<0.1	<0.1	0
MeFOSAA	<0.001	<0.001	0	<0.025	<0.025	0
EtFOSAA	<0.001	<0.001	0	<0.025	<0.025	0
4:2 FTS	<0.001	<0.001	0	<0.025	<0.025	0
6:2 FTS	0.0038	0.0042	10	0.53	0.62	16
8:2 FTS	<0.001	<0.001	0	<0.1	<0.1	0
10:2 FTS	<0.001	<0.001	0	<0.025	<0.025	0
FPrPA	<0.001	<0.001	0	<0.1	<0.1	0
EtFOSA	<0.001	<0.001	0	<0.1	<0.1	0
EtFOSE	<0.001	<0.001	0	<0.1	<0.1	0
FPePA	<0.001	<0.001	0	<0.025	<0.025	0
FHpPA	<0.001	<0.001	0	<0.025	<0.025	0
F-53B minor	<0.001	<0.001	0	<0.05	<0.05	0
HFPO-DA*	<0.001	<0.001	0	<0.05	<0.05	0
Sum F-53B	<0.001	<0.001	0	<0.1	<0.1	0
ADONA	<0.001	<0.001	0	<0.025	<0.025	0
P37DMOA	<0.001	<0.001	0	<0.05	<0.05	0
F-53B major	<0.001	<0.001	0	<0.1	<0.1	0

Notes:

1. Results in µg/L.

-	No value available
<0.001	Below the limit of reporting

Table D-2: QA/QC Water Sampling Results - Blanks - Per- and Poly-Fluoroalkyl Substances (PFAS) [1]

Sample Location	OHA	OHA	OHA	OHA	OHA	OHA
Sample Name	OHA_ADJ_GWKAQ_1_290322	OHA_ADJ_GWKAT_1_300322	OHA_ADJ_GWKAR_1_290322	OHA_ADJ_GWKAV_1_300322	OHA_ADJ_GWKAW_1_300322	OHA_ADJ_GWKAX_1_290322
Laboratory Reference	2775978	2788510	2775978	2788510	2788510	2775978
Monitoring Zone	Trip Blank	Trip Blank	Field Blank	Field Blank	Rinsate	Rinsate
Sampled Date	29/03/2022	30/03/2022	29/03/2022	30/03/2022	30/03/2022	29/03/2022
PFPrS	<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
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	<0.001	<0.001	<0.001	<0.001
L-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total PFHxS	<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
di-PFOS	<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
L-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sum of PFHxS and PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PFECHS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PFBA	<0.002	-	<0.002	-	-	<0.002
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
PFHpA	<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
PFNA	<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	<0.001
PFTeDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PFDoDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
MeFOSA	<0.001	<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
6:2 FTS	<0.001	0.0019	<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	<0.001	<0.001
FPrPA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
EtFOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
EtFOSE	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
FPePA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
FHpPA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
F-53B minor	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
HFPO-DA*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sum F-53B	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
ADONA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
P37DMOA	<0.001	<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.

-	No value available
<0.001	Below the limit of reporting

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	OHA_FTA_MW4_8_300322	MW6	MW6	MW6	OHA_MW6	MW6	OHA_RUP_MW6_6_300920			
Location	MW4	MW6	MW6	MW6	MW6	MW6	MW6			
Sample Date	30/03/2022	20/04/2017	1/08/2017	31/10/2017	22/02/2018	4/07/2018	30/09/2020			
Lab Report Number	2788510	1327497	841470	937355	1055089	1186580	2132127			
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	<0.025	0.11	0.21	0.66	0.17	0.22	0.063	-	-	-
PFBS	0.035	0.56	0.76	1.8	0.43	0.72	0.22	-	-	-
PFPeS	0.046	0.81	0.81	2.3	0.66	0.77	0.26	-	-	-
di-PFHxS	<0.025	0.014	0.02	0.052	0.025	0.015	<0.025	-	-	-
Mono-PFHxS	0.098	1.1	1.9	4.1	1.8	1.7	0.62	-	-	-
L-PFHxS	0.6	5.3	8.1	22	4.1	11	4.2	-	-	-
Total PFHxS[4]	0.7	6.4	10	26	5.9	13	4.8	-	-	-
PFHpS	<0.025	0.34	0.6	0.49	0.38	0.34	0.15	-	-	-
di-PFOS	0.026	0.31	0.23	0.27	0.39	0.27	0.13	-	-	-
Mono-PFOS	0.49	4.9	2.8	2.4	3.3	4.5	2.9	-	-	-
L-PFOS	0.9	6.6	5.9	3	4.5	9.7	6.5	-	-	-
Total PFOS[4]	1.4	**12**	**8.9**	**5.7**	**8.2**	**14**	**9.5**	-	2	0.13
Sum of PFHxS and PFOS[5]	2.1	18	-	-	14	27	14	0.07	-	-
PFECHS	<0.025	-	-	-	-	-	-	-	-	-
PFBA	0.21	1.1	1.1	1.3	0.66	1.2	1.4	-	-	-
PFPeA	0.87	3.6	4	6.8	2.5	4.1	3.2	-	-	-
PFHxA	0.6	2.8	4.4	7	2	4	2.2	-	-	-
PFHpA	0.33	0.9	1.5	2.5	0.93	1.9	1	-	-	-
PFOA	0.29	1.3	1.8	1.7	0.89	2.2	1.1	0.56	632	220
PFNA	0.17	0.75	0.86	0.37	0.66	1.3	0.75	-	-	-
PFDA	<0.025	0.016	0.029	0.013	0.012	0.045	<0.025	-	-	-
PFUnDA	<0.025	-	0.0057	0.0043	<0.005	-	<0.025	-	-	-
PFTrDA	<0.1	-	-	-	-	-	<0.1	-	-	-
PFTeDA	<0.1	-	-	-	-	-	<0.1	-	-	-
PFDoDA	<0.1	-	<0.005	<0.001	-	-	<0.1	-	-	-
FOSA	<0.025	0.0014	<0.001	<0.001	0.0085	<0.001	<0.025	-	-	-
MeFOSA	<0.1	-	<0.005	<0.005	-	-	<0.1	-	-	-
MeFOSAA	<0.025	-	<0.005	<0.005	<0.005	-	<0.025	-	-	-
EtFOSAA	<0.025	-	<0.005	<0.005	<0.005	-	<0.025	-	-	-
4:2 FTS	<0.025	<0.001	<0.005	<0.005	<0.005	<0.001	<0.025	-	-	-
6:2 FTS	0.53	0.53	0.74	0.33	1.7	0.46	0.23	-	-	-
8:2 FTS	<0.1	0.0089	0.0064	<0.005	0.04	0.0069	<0.1	-	-	-
10:2 FTS	<0.025	-	-	-	-	-	-	-	-	-
FPrPA	<0.1	-	-	-	-	-	-	-	-	-
EtFOSA	<0.1	-	<0.005	<0.005	-	-	<0.1	-	-	-
EtFOSE	<0.1	-	<0.005	<0.005	<0.025	-	<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_7_170321	OHA_RUP_MW6_8_271021	OHA_RUP_MW6_9_300322	OHA_BAI_GW111.1_1_170321	OHA_BAI_GW111.1_2_281021	OHA_BAI_GW111.1_3_300322	OHA_BAI_GW111.2_1_040221			
Location	MW6	MW6	MW6	GW111.1	GW111.1	GW111.1	GW111.2			
Sample Date	17/03/2021	27/10/2021	30/03/2022	17/03/2021	28/10/2021	30/03/2022	4/02/2021			
Lab Report Number	2314824	2590573	2788509	2390370	2593741	2787340	2256089			
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	0.028	0.1	0.053	<0.025	<0.025	0.0023	<0.001	-	-	-
PFBS	0.11	0.33	0.19	<0.025	<0.025	0.0083	<0.001	-	-	-
PFPeS	0.12	0.38	0.24	<0.025	<0.025	0.0083	<0.001	-	-	-
di-PFHxS	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	-	-	-
Mono-PFHxS	0.25	0.77	0.57	<0.025	0.032	0.012	<0.001	-	-	-
L-PFHxS	1.6	5.7	3.8	0.083	0.2	0.076	<0.001	-	-	-
Total PFHxS[4]	1.8	6.5	4.4	0.083	0.23	0.088	<0.001	-	-	-
PFHpS	0.06	0.24	0.15	<0.025	<0.025	0.0022	<0.001	-	-	-
di-PFOS	0.075	0.18	0.15	<0.025	<0.025	0.0036	<0.001	-	-	-
Mono-PFOS	1.1	2.7	2.5	0.035	0.15	0.061	<0.001	-	-	-
L-PFOS	1.7	4.6	5.5	0.05	0.21	0.14	<0.001	-	-	-
Total PFOS[4]	**2.9**	**7.5**	**8.2**	0.085	0.36	0.2	<0.001	-	2	0.13
Sum of PFHxS and PFOS[5]	4.7	14	13	0.17	0.59	0.29	<0.001	0.07	-	-
PFECHS	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	-	-	-
PFBA	0.35	0.57	0.57	0.11	0.15	0.079	<0.001	-	-	-
PFPeA	1.1	1.7	2	0.39	0.86	0.26	<0.001	-	-	-
PFHxA	0.78	1.6	1.4	0.28	0.47	0.2	<0.001	-	-	-
PFHpA	0.37	0.69	0.63	0.15	0.17	0.092	<0.001	-	-	-
PFOA	0.35	0.97	0.68	0.073	0.13	0.064	<0.001	0.56	632	220
PFNA	0.28	0.61	0.55	<0.025	0.048	0.017	<0.001	-	-	-
PFDA	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	-	-	-
PFUnDA	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	-	-	-
PFTrDA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.001	-	-	-	-
PFTeDA	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-
PFDoDA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.001	<0.001	-	-	-
FOSA	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	-	-	-
MeFOSA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.001	<0.001	-	-	-
MeFOSAA	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	-	-	-
EtFOSAA	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	-	-	-
4:2 FTS	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	-	-	-	-
6:2 FTS	0.84	<1	0.78	<0.05	0.15	0.012	<0.001	-	-	-
8:2 FTS	<0.1	<0.1	<0.1	<0.1	<0.1	<0.001	<0.001	-	-	-
10:2 FTS	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	-	-	-
FPrPA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.001	<0.001	-	-	-
EtFOSA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.001	<0.001	-	-	-
EtFOSE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.001	<0.001	-	-	-
FPePA	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	-	-	-
FHpPA	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	-	-	-
F-53B minor	<0.05	<0.05	<0.05	<0.05	<0.05	<0.001	<0.001	-	-	-
HFPO-DA*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.001	<0.001	-	-	-
Sum F-53B	<0.1	<0.1	<0.1	<0.1	<0.1	<0.001	<0.001	-	-	-
ADONA	<0.025	<0.025	<0.025	<0.025	<0.025	<0.001	<0.001	-	-	-
P37DMOA	<0.05	<0.05	<0.05	<0.05	<0.05	<0.001	<0.001	-	-	-
F-53B major	<0.1	<0.1	<0.1	<0.1	<0.1	<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_GW111.2_2_170321	OHA_BAI_GW111.2_3_281021	OHA_BAI_GW111.2_4_300322	OHA_BAI_GW111.3_1_170321	OHA_BAI_GW111.3_2_281021	OHA_BAI_GW111.3_3_300322	MW9			
Location	GW111.2	GW111.2	GW111.2	GW111.3	GW111.3	GW111.3	MW9			
Sample Date	17/03/2021	28/10/2021	30/03/2022	17/03/2021	28/10/2021	30/03/2022	20/04/2017	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]
Lab Report Number	2390370	2593741	2787340	2390370	2593741	2787340	1327497			
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base			
Sample Results										
PFPrS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.019	-	-	-
PFBS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.12	-	-	-
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.16	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.21	-	-	-
L-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1.5	-	-	-
Total PFHxS[4]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1.7	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.072	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.055	-	-	-
Mono-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.62	-	-	-
L-PFOS	<0.001	0.0012	<0.001	<0.001	0.0021	0.0027	0.52	-	-	-
Total PFOS[4]	<0.001	0.0012	<0.001	<0.001	0.0021	0.0027	1.2	-	2	0.13
Sum of PFHxS and PFOS[5]	<0.001	0.0012	<0.001	<0.001	0.0021	0.0027	2.9	0.07	-	-
PFECHS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFBA	<0.001	<0.001	-	<0.001	<0.001	-	0.69	-	-	-
PFPeA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	3.5	-	-	-
PFHxA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1.8	-	-	-
PFHpA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1	-	-	-
PFOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.67	0.56	632	220
PFNA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.36	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0014	-	-	-
PFUnDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
PFTrDA	-	-	-	-	-	-	-	-	-	-
PFTeDA	-	-	<0.001	-	<0.001	<0.001	-	-	-	-
PFDoDA	-	<0.001	<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	-	-	-	-
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	0.012	-	-	-
6:2 FTS	<0.001	0.0024	<0.001	<0.001	0.0037	<0.001	1.9	-	-	-
8:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0035	-	-	-
10:2 FTS	-	<0.001	<0.001	-	<0.001	<0.001	-	-	-	-
FPrPA	<0.001	<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	-	-	-	-
FPePA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
FHpPA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
F-53B minor	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
HFPO-DA*	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Sum F-53B	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
ADONA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
P37DMOA	<0.001	<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	MW9	OHA_MW9	MW9	OHA_DTK_MW9_5_300920	OHA_DTK_MW9_6_180321	OHA_DTK_MW9_7_271021	OHA_DTK_MW9_8_300322	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	MW9	MW9	MW9	MW9	MW9	MW0	MW9			
Sample Date	1/11/2017	20/02/2018	4/07/2018	30/09/2020	18/03/2021	27/10/2021	30/03/2022			
Lab Report Number	937355	1055089	1186581	2132127	2314824	2590573	2786745			
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base			
Sample Results										
PFPrS	0.018	0.031	0.0091	<0.025	<0.025	<0.025	0.022	-	-	-
PFBS	0.072	0.093	0.028	0.034	0.064	0.046	0.049	-	-	-
PFPeS	0.11	0.14	0.043	0.038	0.069	0.057	0.074	-	-	-
di-PFHxS	0.0025	0.003	<0.001	<0.025	<0.025	<0.025	0.0015	-	-	-
Mono-PFHxS	0.16	0.26	0.058	0.071	0.14	0.1	0.14	-	-	-
L-PFHxS	1.1	1.3	0.42	0.47	0.91	0.79	0.89	-	-	-
Total PFHxS[4]	1.3	1.6	0.48	0.54	1	0.89	1	-	-	-
PFHpS	0.06	0.071	0.021	<0.025	0.034	0.029	0.042	-	-	-
di-PFOS	0.057	0.078	0.013	<0.025	0.045	0.042	0.049	-	-	-
Mono-PFOS	0.46	0.72	0.18	0.19	0.52	0.46	0.55	-	-	-
L-PFOS	0.31	0.58	0.19	0.24	0.46	0.53	0.59	-	-	-
Total PFOS[4]	0.83	1.4	0.38	0.43	1	1	1.2	-	2	0.13
Sum of PFHxS and PFOS[5]	-	3	0.86	0.97	2	1.9	2.2	0.07	-	-
PFECHS	-	-	-	-	<0.025	<0.025	<0.001	-	-	-
PFBA	0.57	0.54	0.45	0.57	0.51	0.52	0.59	-	-	-
PFPeA	2.9	2.6	1.7	2.1	2.3	2	2.1	-	-	-
PFHxA	1.5	1.5	0.92	1	1.3	1	1.1	-	-	-
PFHpA	0.57	0.68	0.44	0.43	0.56	0.49	0.56	-	-	-
PFOA	0.52	0.67	0.36	0.33	0.48	0.47	0.51	0.56	632	220
PFNA	0.34	0.41	0.23	0.13	0.26	0.26	0.28	-	-	-
PFDA	<0.001	<0.001	0.0011	<0.025	<0.025	<0.025	0.0015	-	-	-
PFUnDA	<0.001	<0.005	<0.001	<0.025	<0.025	<0.025	<0.001	-	-	-
PFTrDA	-	-	<0.025	<0.1	<0.1	<0.1	<0.001	-	-	-
PFTeDA	-	-	<0.1	<0.1	<0.1	<0.1	<0.001	-	-	-
PFDoDA	<0.001	-	<0.025	<0.1	<0.1	<0.1	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.025	<0.025	<0.025	<0.001	-	-	-
MeFOSA	<0.005	-	<0.005	<0.1	<0.1	<0.1	<0.001	-	-	-
MeFOSAA	<0.005	<0.005	<0.001	<0.025	<0.025	<0.025	<0.001	-	-	-
EtFOSAA	<0.005	<0.005	<0.001	<0.025	<0.025	<0.025	<0.001	-	-	-
4:2 FTS	0.0095	0.011	0.004	<0.025	<0.025	<0.025	0.0018	-	-	-
6:2 FTS	3.6	1.7	1.5	1.1	3.2	2.3	2.6	-	-	-
8:2 FTS	<0.005	<0.005	0.0022	<0.1	<0.1	<0.1	0.0043	-	-	-
10:2 FTS	-	-	-	-	<0.025	<0.025	<0.001	-	-	-
FPrPA	-	-	-	-	<0.1	<0.1	<0.001	-	-	-
EtFOSA	<0.005	-	<0.005	<0.1	<0.1	<0.1	<0.001	-	-	-
EtFOSE	<0.005	<0.025	<0.005	<0.1	<0.1	<0.1	<0.001	-	-	-
FPePA	-	-	-	-	<0.025	<0.025	0.0032	-	-	-
FHpPA	-	-	-	-	<0.025	<0.025	<0.001	-	-	-
F-53B minor	-	-	-	-	<0.05	<0.05	<0.001	-	-	-
HFPO-DA*	-	-	-	-	<0.05	<0.05	<0.001	-	-	-
Sum F-53B	-	-	-	-	<0.1	<0.1	<0.001	-	-	-
ADONA	-	-	-	-	<0.025	<0.025	<0.001	-	-	-
P37DMOA	-	-	-	-	<0.05	<0.05	<0.001	-	-	-
F-53B major	-	-	-	-	<0.1	<0.1	<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_WS1	WS01	WS1	OHA_FTA_WS1_4_290920	OHA_FTA_WS1_5_170321	OHA_FTA_WS1_6_271021	OHA_FTA_WS1_7_290322	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	WS1	WS1	WS1	WS1	WS1	WS1	WS1			
Sample Date	19/02/2018	3/07/2018	21/07/2018	29/09/2020	17/03/2021	27/10/2021	29/03/2022			
Lab Report Number	1055089	1186578	1326866	2096316	2318531	2590573	2775976			
Monitoring Zone	On-base	On-base	On-base	On-base	On-base	On-base	On-base			
Sample Results										
PFPrS	0.01	0.0098	0.0097	0.012	0.013	<0.025	0.014	-	-	-
PFBS	0.022	0.024	0.023	0.026	0.026	0.026	0.027	-	-	-
PFPeS	0.02	0.021	0.023	0.023	0.024	0.026	0.028	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.001	-	-	-
Mono-PFHxS	0.027	0.029	0.03	0.035	0.033	0.037	0.034	-	-	-
L-PFHxS	0.11	0.12	0.12	0.12	0.13	0.14	0.14	-	-	-
Total PFHxS[4]	0.14	0.15	0.15	0.16	0.16	0.18	0.17	-	-	-
PFHpS	0.0022	0.0026	0.0034	0.0023	0.0018	<0.025	0.003	-	-	-
di-PFOS	0.0029	0.0031	0.0024	0.0041	0.0029	<0.025	0.0032	-	-	-
Mono-PFOS	0.02	0.022	0.013	0.021	0.019	<0.025	0.025	-	-	-
L-PFOS	0.0077	0.011	0.0071	0.0073	0.011	<0.025	0.013	-	-	-
Total PFOS[4]	0.031	0.036	0.022	0.032	0.033	<0.025	0.041	-	2	0.13
Sum of PFHxS and PFOS[5]	0.17	0.19	0.17	0.19	0.19	0.18	0.21	0.07	-	-
PFECHS	-	-	-	-	<0.001	<0.025	<0.001	-	-	-
PFBA	0.019	0.018	0.018	0.018	0.018	<0.1	0.023	-	-	-
PFPeA	0.11	0.1	0.1	0.093	0.089	0.11	0.11	-	-	-
PFHxA	0.09	0.092	0.097	0.088	0.082	0.093	0.098	-	-	-
PFHpA	0.028	0.027	0.025	0.029	0.03	0.036	0.035	-	-	-
PFOA	0.02	0.022	0.018	0.021	0.024	0.029	0.028	0.56	632	220
PFNA	0.0064	0.0078	0.0056	0.0062	0.0065	<0.025	0.0084	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.001	-	-	-
PFUnDA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.001	-	-	-
PFTrDA	-	<0.025	-	-	-	<0.1	-	-	-	-
PFTeDA	-	<0.1	-	-	-	<0.1	<0.001	-	-	-
PFDoDA	-	<0.025	<0.005	<0.001	<0.001	<0.1	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.025	<0.001	-	-	-
MeFOSA	<0.005	-	<0.005	<0.001	-	<0.1	<0.001	-	-	-
MeFOSAA	<0.005	<0.001	<0.005	<0.001	<0.001	<0.025	<0.001	-	-	-
EtFOSAA	<0.005	<0.001	<0.005	<0.001	<0.001	<0.025	<0.001	-	-	-
4:2 FTS	<0.005	<0.001	<0.001	<0.001	<0.001	<0.025	0.0012	-	-	-
6:2 FTS	0.12	0.11	0.12	0.089	0.1	<1	0.13	-	-	-
8:2 FTS	<0.005	<0.001	<0.001	<0.001	<0.001	<0.1	<0.001	-	-	-
10:2 FTS	-	-	-	-	<0.001	<0.025	<0.001	-	-	-
FPrPA	-	-	-	-	<0.001	<0.1	<0.001	-	-	-
EtFOSA	<0.005	-	<0.005	<0.001	-	<0.1	<0.001	-	-	-
EtFOSE	<0.005	-	<0.005	<0.001	-	<0.1	<0.001	-	-	-
FPePA	-	-	-	-	<0.001	<0.025	<0.001	-	-	-
FHpPA	-	-	-	-	<0.001	<0.025	<0.001	-	-	-
F-53B minor	-	-	-	-	<0.001	<0.05	<0.001	-	-	-
HFPO-DA*	-	-	-	-	<0.001	<0.05	<0.001	-	-	-
Sum F-53B	-	-	-	-	<0.001	<0.1	<0.001	-	-	-
ADONA	-	-	-	-	<0.001	<0.025	<0.001	-	-	-
P37DMOA	-	-	-	-	<0.001	<0.05	<0.001	-	-	-
F-53B major	-	-	-	-	<0.001	<0.1	<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	WS2-1	WS2	OHA_WS2	WS02	OHA_QRY_WS2_5_221119	OHA_QRY_WS2_6_020620	OHA_QRY_WS2_7_290920	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	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										
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_QRY_WS2_12_300322	OHA_ADJ_GW106_1_160321	OHA_ADJ_GW106_2_291021			
Location	WS2	WS2	WS2	WS2	WS2	GW106	GW106			
Sample Date	18/11/2020	18/03/2021	22/06/2021	28/10/2021	30/03/2022	16/03/2021	29/10/2021			
Lab Report Number	2172205	2327922	2434042	2593734	2786751	2316433	2590583			
Monitoring Zone	On-base	On-base	On-base	On-base	On-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	<0.001	<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	0.0037	<0.001	<0.001	-	-	-
Total PFHxS[4]	0.0041	0.0029	0.0027	0.0044	0.0037	<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	0.0013	<0.001	<0.001	-	-	-
L-PFOS	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	-	-	-
Total PFOS[4]	<0.001	<0.001	<0.001	0.0011	0.0033	<0.001	<0.001	-	2	0.13
Sum of PFHxS and PFOS[5]	0.0041	0.0029	0.0027	0.0055	0.007	<0.001	<0.001	0.07	-	-
PFECHS	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBA	0.0035	0.0034	<0.005	0.0039	0.0048	<0.002	<0.001	-	-	-
PFPeA	0.0041	0.004	0.0032	0.0048	0.0052	<0.001	<0.001	-	-	-
PFHxA	0.003	0.0026	0.002	0.0034	0.0036	<0.001	<0.001	-	-	-
PFHpA	0.0019	0.0015	0.0014	0.0017	0.0019	<0.001	<0.001	-	-	-
PFOA	0.0015	0.0012	0.0013	0.0016	0.0017	<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	-	<0.001	-	<0.001	-	-	-
PFTeDA	-	-	-	<0.001	<0.001	-	<0.001	-	-	-
PFDoDA	-	-	<0.001	<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	<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	-	-	-
10:2 FTS	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
FPrPA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSA	-	-	<0.001	<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	<0.001	-	-	-
FHpPA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
F-53B minor	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
HFPO-DA*	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Sum F-53B	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
ADONA	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
P37DMOA	-	<0.001	<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_GW106_3_290322	OHA_ADJ_GW107_1_011020	OHA_ADJ_GW107_2_291021	OHA_ADJ_GW107_3_300322	OHA_ADJ_GW108_1_011020	OHA_ADJ_GW108_2_150321	OHA_ADJ_GW108_3_291021			
Location	GW106	GW107	GW107	GW107	GW108	GW108	GW108			
Sample Date	29/03/2022	1/10/2020	29/10/2021	30/03/2022	15/03/2021	15/03/2021	29/10/2021			
Lab Report Number	2780982	2096735	2590579	2786744	2096735	2313652	2590569			
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	<0.001	<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	<0.001	<0.001	<0.001	0.0011	<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	-	-	-
PFUnDA	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	-	-
PFTrDA	<0.001	-	<0.001	<0.001	-	-	<0.001	-	-	-
PFTeDA	-	-	-	<0.001	-	-	<0.001	-	-	-
PFDoDA	<0.001	-	<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	-	-	-
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	<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	<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_GW108_4_290322	OHA_ADJ_GW109_1_011020	OHA_ADJ_GW109_2_150321	OHA_ADJ_GW109_3_291021	OHA_ADJ_GW109_4_290322	OHA_ADJ_GW112.1_1_180321	OHA_ADJ_GW112.1_2_281021			
Location	GW108	GW109	GW109	GW109	GW109	GW112.1	GW112.1			
Sample Date	29/03/2022	1/10/2020	15/03/2021	29/10/2021	29/03/2022	18/03/2021	28/10/2021			
Lab Report Number	2780972	2096735	2313643	2593930	2780975	2335132	2593744			
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	<0.001	<0.001	0.012	-	-	-
PFBS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.028	-	-	-
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.033	-	-	-
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	0.052	-	-	-
L-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.25	-	-	-
Total PFHxS[4]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.3	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0076	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.011	-	-	-
Mono-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.14	-	-	-
L-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.21	-	-	-
Total PFOS[4]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.36	-	2	0.13
Sum of PFHxS and PFOS[5]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.66	0.07	-	-
PFECHS	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBA	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.11	-	-	-
PFPeA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.42	-	-	-
PFHxA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.33	-	-	-
PFHpA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.17	-	-	-
PFOA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.094	0.56	632	220
PFNA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.037	-	-	-
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	-	-	-	<0.001	-	-	-	-	-
PFTeDA	-	-	-	<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	-	-	-
6:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.1	-	-	-
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	<0.001	<0.001	-	-	-
FPrPA	<0.001	-	<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	<0.001	-	-	-
FHpPA	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
F-53B minor	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
HFPO-DA*	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Sum F-53B	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
ADONA	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
P37DMOA	<0.001	-	<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_3_290322	OHA_ADJ_GW112.2_1_180321	OHA_ADJ_GW112.2_2_281021	OHA_ADJ_GW112.2_3_280322	OHA_ADJ_GW31_1_120218	OHA_ADJ_GW31_2_230518	OHA_ADJ_GW31_3_12918			
Location	GW112.1	GW112.2	GW112.2	GW112.2	GW31	GW31	GW31			
Sample Date	29/03/2022	18/03/2021	28/10/2021	28/03/2022	12/02/2018	23/05/2018	12/09/2018			
Lab Report Number	2785103	2335132	2593744	2785781	1032528	1153593	1252502			
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	<0.025	0.012	<0.001	<0.001	0.0033	0.0038	0.0058	-	-	-
PFBS	0.028	0.03	<0.001	<0.001	0.011	0.01	0.0095	-	-	-
PFPeS	0.028	0.035	<0.001	<0.001	0.014	0.0089	0.0084	-	-	-
di-PFHxS	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	0.045	0.056	<0.001	<0.001	0.016	0.013	0.014	-	-	-
L-PFHxS	0.25	0.29	<0.001	<0.001	0.064	0.055	0.056	-	-	-
Total PFHxS[4]	0.3	0.35	<0.001	<0.001	0.08	0.068	0.07	-	-	-
PFHpS	<0.025	0.0075	<0.001	<0.001	0.0014	0.0011	0.0011	-	-	-
di-PFOS	<0.025	0.012	<0.001	<0.001	0.0042	0.002	<0.001	-	-	-
Mono-PFOS	0.088	0.16	<0.001	<0.001	0.033	0.016	0.016	-	-	-
L-PFOS	0.094	0.21	<0.001	<0.001	0.023	0.0079	0.0058	-	-	-
Total PFOS[4]	0.18	0.38	<0.001	<0.001	0.06	0.026	0.022	-	2	0.13
Sum of PFHxS and PFOS[5]	0.48	0.73	<0.001	<0.001	0.14	0.094	0.092	0.07	-	-
PFECHS	<0.025	<0.001	<0.001	<0.001	-	-	-	-	-	-
PFBA	<0.2	0.11	<0.001	<0.001	0.055	0.035	0.035	-	-	-
PFPeA	0.42	0.4	<0.001	<0.001	0.21	0.097	0.083	-	-	-
PFHxA	0.34	0.34	<0.001	<0.001	0.14	0.074	0.067	-	-	-
PFHpA	0.16	0.17	<0.001	<0.001	0.053	0.027	0.024	-	-	-
PFOA	0.093	0.092	<0.001	<0.001	0.024	0.013	0.011	0.56	632	220
PFNA	0.026	0.041	<0.001	<0.001	0.0059	0.0021	0.0014	-	-	-
PFDA	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFUnDA	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFTrDA	<0.1	-	-	<0.001	-	<0.025	<0.005	-	-	-
PFTeDA	<0.1	-	-	-	-	<0.1	<0.005	-	-	-
PFDoDA	<0.1	-	<0.001	<0.001	<0.001	<0.025	<0.001	-	-	-
FOSA	<0.025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.1	<0.001	<0.001	<0.001	<0.025	<0.005	<0.001	-	-	-
MeFOSAA	<0.025	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	-	-	-
EtFOSAA	<0.025	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	-	-	-
4:2 FTS	<0.025	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	-	-	-
6:2 FTS	0.11	0.066	0.0052	<0.001	0.036	0.0092	0.0052	-	-	-
8:2 FTS	<0.1	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	-	-	-
10:2 FTS	<0.025	-	<0.001	<0.001	-	-	-	-	-	-
FPrPA	<0.1	<0.001	<0.001	<0.001	-	-	-	-	-	-
EtFOSA	<0.1	-	<0.001	-	<0.025	<0.001	<0.001	-	-	-
EtFOSE	<0.1	-	<0.001	<0.001	<0.025	<0.005	<0.001	-	-	-
FPePA	<0.025	<0.001	<0.001	<0.001	-	-	-	-	-	-
FHpPA	<0.025	<0.001	<0.001	<0.001	-	-	-	-	-	-
F-53B minor	<0.05	<0.001	<0.001	<0.001	-	-	-	-	-	-
HFPO-DA*	<0.05	<0.001	<0.001	<0.001	-	-	-	-	-	-
Sum F-53B	<0.1	<0.001	<0.001	<0.001	-	-	-	-	-	-
ADONA	<0.025	<0.001	<0.001	<0.001	-	-	-	-	-	-
P37DMOA	<0.05	<0.001	<0.001	<0.001	-	-	-	-	-	-
F-53B major	<0.1	<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_GW31_7_290322	OHA_ADJ_GW53_1_150218	OHA_ADJ_GW53_2_150518	OHA_ADJ_GW53_3_10918			
Location	GW31	GW31	GW31	GW31	GW53	GW53	GW53			
Sample Date	29/09/2020	16/03/2021	29/10/2021	29/03/2022	15/02/2018	15/05/2018	10/09/2018			
Lab Report Number	2096319	2316425	2593739	2786750	1040534	1139707	1244388			
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	0.0045	0.0042	0.0054	0.0046	<0.001	<0.001	<0.001	-	-	-
PFBS	0.01	0.011	0.009	0.0095	<0.001	<0.001	<0.001	-	-	-
PFPeS	0.0085	0.0096	0.0083	0.0085	<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	0.013	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	0.063	0.073	0.059	0.058	<0.001	<0.001	<0.001	-	-	-
Total PFHxS[4]	0.079	0.09	0.072	0.071	<0.001	<0.001	<0.001	-	-	-
PFHpS	0.0015	0.0016	0.0013	0.0013	<0.001	<0.001	<0.001	-	-	-
di-PFOS	0.0034	0.0034	0.0026	0.0025	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	0.028	0.037	0.025	0.024	<0.001	<0.001	<0.001	-	-	-
L-PFOS	0.013	0.028	0.011	0.015	<0.001	<0.001	<0.001	-	-	-
Total PFOS[4]	0.044	0.068	0.039	0.042	<0.001	<0.001	<0.001	-	2	0.13
Sum of PFHxS and PFOS[5]	0.12	0.16	0.11	0.11	<0.001	<0.001	<0.001	0.07	-	-
PFECHS	-	<0.001	<0.001	<0.001	-	-	-	-	-	-
PFBA	0.047	0.06	0.042	0.047	<0.005	<0.005	<0.005	-	-	-
PFPeA	0.15	0.25	0.13	0.15	<0.001	<0.001	<0.001	-	-	-
PFHxA	0.12	0.17	0.083	0.1	<0.001	<0.001	<0.001	-	-	-
PFHpA	0.042	0.063	0.031	0.036	<0.001	<0.001	<0.001	-	-	-
PFOA	0.019	0.025	0.016	0.017	<0.001	<0.001	<0.001	0.56	632	220
PFNA	0.0039	0.0076	0.0029	0.0041	<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	-	-	-	<0.001	<0.025	<0.025	-	-	-	-
PFTeDA	-	-	<0.001	-	-	-	-	-	-	-
PFDoDA	<0.001	<0.001	<0.001	<0.001	<0.025	<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	<0.001	<0.025	<0.005	<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	0.0038	<0.001	<0.01	<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	-	-	-	-	-	-
EtFOSA	<0.001	<0.001	-	<0.001	<0.025	<0.001	<0.001	-	-	-
EtFOSE	<0.001	<0.001	-	<0.001	<0.025	<0.005	<0.005	-	-	-
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_GW53_4_300920	OHA_ADJ_GW53_5_160321	OHA_ADJ_GW53_6_291021	OHA_ADJ_GW53_7_290322	OHA_ADJ_GW6_1_111217	OHA_ADJ_GW6_2_130218	OHA_ADJ_GW6_3_140518			
Location	GW53	GW53	GW53	GW53	GW6	GW6	GW6			
Sample Date	30/09/2020	16/03/2021	29/10/2021	29/03/2022	11/12/2017	13/02/2018	14/05/2018			
Lab Report Number	2096317	2316429	2593735	2780973	989127	1032179	1133549			
Monitoring Zone	Off-base	Off-base	Off-base	Off-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	0.0022	0.0034	-	-	-	-
PFBS	<0.001	<0.001	<0.001	<0.001	0.0067	0.0065	0.0022	-	-	-
PFPeS	<0.001	<0.001	<0.001	<0.001	0.0054	0.0056	0.0013	-	-	-
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	0.011	0.0097	0.002	-	-	-
L-PFHxS	<0.001	<0.001	<0.001	<0.001	0.066	0.054	0.014	-	-	-
Total PFHxS[4]	<0.001	<0.001	<0.001	<0.001	0.077	0.064	0.016	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.001	0.0018	0.0023	<0.001	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.001	0.0027	0.0022	<0.001	-	-	-
Mono-PFOS	<0.001	<0.001	<0.001	<0.001	0.026	0.025	0.0089	-	-	-
L-PFOS	<0.001	<0.001	<0.001	<0.001	0.023	0.023	0.0092	-	-	-
Total PFOS[4]	<0.001	<0.001	<0.001	<0.001	0.052	0.05	0.018	-	2	0.13
Sum of PFHxS and PFOS[5]	<0.001	<0.001	<0.001	<0.001	0.13	0.11	0.034	0.07	-	-
PFECHS	-	<0.001	<0.001	<0.001	-	-	-	-	-	-
PFBA	<0.001	<0.002	<0.001	<0.001	0.025	0.02	-	-	-	-
PFPeA	<0.001	<0.001	<0.001	<0.001	0.057	0.044	0.0035	-	-	-
PFHxA	<0.001	<0.001	<0.001	<0.001	0.044	0.038	0.0039	-	-	-
PFHpA	<0.001	<0.001	<0.001	<0.001	0.02	0.016	0.0018	-	-	-
PFOA	<0.001	<0.001	<0.001	<0.001	0.014	0.014	0.0022	0.56	632	220
PFNA	<0.001	<0.001	<0.001	<0.001	0.0038	0.0034	<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	<0.005	<0.001	<0.001	-	-	-
PFTrDA	-	-	-	-	-	-	<0.025	-	-	-
PFTeDA	-	-	<0.001	-	-	-	<0.025	-	-	-
PFDoDA	<0.001	<0.001	<0.001	-	-	<0.001	<0.025	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.001	<0.001	<0.001	<0.001	-	-	<0.005	-	-	-
MeFOSAA	<0.001	<0.001	<0.001	<0.001	<0.005	<0.025	<0.001	-	-	-
EtFOSAA	<0.001	<0.001	<0.001	<0.001	<0.005	<0.025	<0.001	-	-	-
4:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	-	-	-
6:2 FTS	<0.001	<0.001	<0.001	<0.001	0.023	0.0032	<0.01	-	-	-
8:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	-	-	-
10:2 FTS	-	<0.001	<0.001	-	-	-	-	-	-	-
FPrPA	-	<0.001	<0.001	<0.001	-	-	-	-	-	-
EtFOSA	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	-	-	-
EtFOSE	<0.001	<0.001	<0.001	<0.001	-	<0.025	<0.005	-	-	-
FPePA	-	<0.001	<0.001	<0.001	-	-	-	-	-	-
FHpPA	-	<0.001	<0.001	<0.001	-	-	-	-	-	-
F-53B minor	-	<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_GW6_4_13918	OHA_ADJ_GW6_5_290920	OHA_ADJ_GW6_6_160321	OHA_ADJ_GW6_7_281021	OHA_ADJ_GW6_8_290322	OHA_ADJ_GW65_1_210218	OHA_ADJ_GW65_2_170518			
Location	GW6	GW6	GW6	GW6	GW6	GW65	GW65			
Sample Date	13/09/2018	29/09/2020	16/03/2021	28/10/2021	29/03/2022	21/02/2018	17/05/2018			
Lab Report Number	1260155	2096315	2313648	2590577	2780968	1047797	1142284			
Monitoring Zone	On-base	On-base	On-base	On-base	On-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	0.004	0.0025	0.0016	0.0025	-	<0.001	<0.001	-	-	-
PFBS	0.0038	0.0027	0.0023	0.0028	0.0021	<0.001	<0.001	-	-	-
PFPeS	0.0038	0.0039	0.0031	0.0033	0.0042	<0.001	<0.001	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	0.0026	0.0023	0.0035	0.0026	0.004	<0.001	<0.001	-	-	-
L-PFHxS	0.014	0.014	0.014	0.013	0.027	<0.001	<0.001	-	-	-
Total PFHxS[4]	0.017	0.016	0.018	0.016	0.031	<0.001	<0.001	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.001	0.0014	<0.001	<0.001	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	0.003	0.0044	0.0038	0.0051	0.014	<0.001	<0.001	-	-	-
L-PFOS	0.0014	0.0042	0.0043	0.009	0.017	<0.001	<0.001	-	-	-
Total PFOS[4]	0.0044	0.0086	0.0081	0.014	0.031	<0.001	<0.001	-	2	0.13
Sum of PFHxS and PFOS[5]	0.021	0.025	0.026	0.03	0.062	<0.001	<0.001	0.07	-	-
PFECHS	-	-	<0.001	<0.001	<0.001	-	-	-	-	-
PFBA	<0.01	-	0.011	0.0053	-	<0.005	<0.01	-	-	-
PFPeA	0.0037	0.003	<0.001	0.0068	0.018	<0.001	<0.001	-	-	-
PFHxA	0.0053	0.0038	0.0072	0.0078	0.017	<0.001	<0.001	-	-	-
PFHpA	0.0021	0.0024	0.003	0.0033	0.0091	<0.001	<0.001	-	-	-
PFOA	0.0018	0.0019	0.0031	0.0019	0.0088	<0.001	<0.001	0.56	632	220
PFNA	<0.001	<0.001	<0.001	<0.001	0.0033	<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	<0.005	-	-	<0.001	<0.001	-	<0.025	-	-	-
PFTeDA	<0.005	-	-	-	-	-	-	-	-	-
PFDoDA	<0.001	-	-	<0.001	<0.001	-	<0.025	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.001	<0.001	-	<0.001	<0.001	-	<0.005	-	-	-
MeFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	-	-	-
EtFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	-	-	-
4:2 FTS	-	-	-	-	-	<0.005	<0.001	-	-	-
6:2 FTS	0.001	-	-	0.0013	<0.001	<0.005	<0.001	-	-	-
8:2 FTS	<0.001	-	<0.001	<0.001	<0.001	<0.005	<0.001	-	-	-
10:2 FTS	-	-	-	<0.001	<0.001	-	-	-	-	-
FPrPA	-	-	<0.001	<0.001	<0.001	-	-	-	-	-
EtFOSA	<0.001	<0.001	-	<0.001	<0.001	-	<0.001	-	-	-
EtFOSE	<0.001	<0.001	-	<0.001	<0.001	-	<0.005	-	-	-
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_3_11918	OHA_ADJ_GW65_4_290920	OHA_ADJ_GW65_5_150321	OHA_ADJ_GW65_6_291021	OHA_ADJ_GW65_7_290322	OHA_ADJ_GW67_1_210218	OHA_ADJ_GW67_2_140518			
Location	GW65	GW65	GW65	GW65	GW65	GW67	GW67			
Sample Date	11/09/2018	29/09/2020	15/03/2021	29/10/2021	29/03/2022	21/02/2018	14/05/2018			
Lab Report Number	1244707	2096328	2313647	2593738	2780969	1047809	1134445			
Monitoring Zone	Off-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	<0.001	<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	0.0016	0.0018	-	-	-
Total PFHxS[4]	<0.001	<0.001	<0.001	<0.001	<0.001	0.0016	0.0018	-	-	-
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	0.0016	0.0018	0.07	-	-
PFECHS	-	-	<0.001	<0.001	<0.001	-	-	-	-	-
PFBA	<0.005	<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	<0.001	<0.001	-	-	-
PFTrDA	<0.001	-	-	-	<0.001	-	<0.025	-	-	-
PFTeDA	<0.005	-	-	<0.001	-	-	<0.025	-	-	-
PFDoDA	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.025	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	<0.005	<0.001	-	<0.001	<0.001	-	<0.005	-	-	-
MeFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	-	-	-
EtFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	-	-	-
4:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	-	-	-
6:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.01	-	-	-
8:2 FTS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	-	-	-
10:2 FTS	-	-	-	<0.001	<0.001	-	-	-	-	-
FPrPA	-	-	<0.001	<0.001	<0.001	-	-	-	-	-
EtFOSA	<0.005	<0.001	-	<0.001	<0.001	-	<0.001	-	-	-
EtFOSE	<0.001	<0.001	-	<0.001	<0.001	-	<0.005	-	-	-
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_GW67_3_110918	OHA_ADJ_GW67_4_300920	OHA_ADJ_GW67_5_170321	OHA_ADJ_GW67_6_271021	OHA_ADJ_GW67_7_290322			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	GW67	GW67	GW67	GW67	GW67					
Sample Date	11/09/2018	30/09/2020	17/03/2021	27/10/2021	29/03/2022					
Lab Report Number	1244090	2096741	2317694	2618128	2780991					
Monitoring Zone	Off-base	Off-base	Off-base	Off-base	Off-base					
Sample Results										
PFPrS	-	<0.001	0.0013	<0.001	<0.001			-	-	-
PFBS	<0.001	<0.001	<0.001	<0.001	<0.001			-	-	-
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001			-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001			-	-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001			-	-	-
L-PFHxS	0.0012	<0.001	<0.001	<0.001	<0.001			-	-	-
Total PFHxS[4]	0.0012	<0.001	<0.001	<0.001	<0.001			-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001			-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001			-	-	-
Mono-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001			-	-	-
L-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001			-	-	-
Total PFOS[4]	<0.001	<0.001	<0.001	<0.001	<0.001			-	2	0.13
Sum of PFHxS and PFOS[5]	0.0012	<0.001	<0.001	<0.001	<0.001			0.07	-	-
PFECHS	-	-	<0.001	<0.001	<0.001			-	-	-
PFBA	-	<0.001	0.0072	-	0.0087			-	-	-
PFPeA	-	<0.001	<0.001	<0.001	<0.001			-	-	-
PFHxA	<0.001	<0.001	<0.001	<0.001	<0.001			-	-	-
PFHpA	<0.001	<0.001	<0.001	<0.001	<0.001			-	-	-
PFOA	<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			-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001			-	-	-
PFUnDA	<0.001	-	<0.001	<0.001	<0.001			-	-	-
PFTrDA	<0.005	-	-	-	<0.001			-	-	-
PFTeDA	<0.005	-	-	<0.001	-			-	-	-
PFDoDA	<0.001	-	<0.001	<0.001	<0.001			-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001			-	-	-
MeFOSA	<0.005	-	-	<0.001	<0.001			-	-	-
MeFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001			-	-	-
EtFOSAA	<0.001	<0.001	<0.001	<0.001	<0.001			-	-	-
4:2 FTS	-	-	<0.001	<0.001	-			-	-	-
6:2 FTS	<0.001	<0.001	<0.001	-	<0.001			-	-	-
8:2 FTS	<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	<0.005	-	-	<0.001	<0.001			-	-	-
EtFOSE	<0.001	<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 Poly-Fluoroalkyl 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	OHA_ADJ_SW33_7_280322	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	SW33			
Sampled_Date_Time	19/02/2018	22/05/2018	12/09/2018	29/09/2020	16/03/2021	29/10/2021	28/03/2022			
Lab_Report_Number	1047510	1147417	1248198	2094714	2316431	2590572	2785715			
Sample Results										
PFPrS	0.0036	<0.001	0.0034	<0.025	0.002	0.0035	0.0018	-	-	-
PFBS	0.012	<0.001	0.0077	<0.025	0.0062	0.0072	0.0037	-	-	-
PFPeS	0.012	<0.001	0.0075	<0.025	0.0058	0.0077	0.004	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	0.019	<0.001	0.012	<0.025	0.0088	0.012	0.0058	-	-	-
L-PFHxS	0.11	0.0015	0.067	<0.025	0.049	0.074	0.033	-	-	-
Total PFHxS [3]	0.13	0.0015	0.079	<0.025	0.058	0.086	0.039	-	-	-
PFHpS	0.0033	<0.001	0.0017	<0.025	0.0013	0.002	<0.001	-	-	-
di-PFOS	0.0046	<0.001	0.0025	<0.025	0.0021	0.0028	0.0013	-	-	-
Mono-PFOS	0.06	<0.001	0.032	<0.025	0.036	0.041	0.019	-	-	-
L-PFOS	0.047	0.0013	0.024	<0.025	0.052	0.045	0.02	-	-	-
Total PFOS [3]	0.11	0.0013	0.058	<0.025	0.09	0.089	0.04	31	2	0.13
Sum of PFHxS and PFOS [5]	0.24	0.0028	0.14	<0.025	0.15	0.18	0.079	-	-	-
PFECHS	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
PFBA	0.087	-	0.044	<0.2	0.043	0.061	0.025	-	-	-
PFPeA	0.4	0.0037	0.16	<0.1	0.17	0.27	0.085	-	-	-
PFHxA	0.29	0.0033	0.13	<0.025	0.13	0.18	0.061	-	-	-
PFHpA	0.11	0.0013	0.049	<0.025	0.054	0.074	0.024	-	-	-
PFOA	0.051	<0.001	0.021	<0.025	0.021	0.027	0.01	1824	632	220
PFNA	0.018	<0.001	0.0055	<0.025	0.0092	0.0091	0.0033	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-	-
PFUnDA	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-	-
PFTrDA	-	<0.005	-	<0.1	-	<0.001	<0.001	-	-	-
PFTeDA	-	<0.025	-	<0.1	-	<0.001	<0.001	-	-	-
PFDoDA	-	<0.005	-	<0.1	<0.001	<0.001	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-	-
MeFOSA	-	<0.001	<0.005	<0.1	<0.001	<0.001	<0.001	-	-	-
MeFOSAA	<0.005	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<0.005	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	<0.005	<0.001	-	<0.025	<0.001	-	-	-	-	-
6:2 FTS	0.0051	0.0016	0.017	<0.05	<0.001	0.0051	0.0022	-	-	-
8:2 FTS	<0.005	<0.001	<0.001	<0.1	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
FPrPA	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
EtFOSA	-	<0.001	<0.005	<0.1	<0.001	<0.001	<0.001	-	-	-
EtFOSE	<0.025	<0.005	<0.005	<0.1	<0.001	<0.001	<0.001	-	-	-
FPePA	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
FHpPA	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
F-53B minor	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
HFPO-DA*	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
Sum F-53B	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
ADONA	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
P37DMOA	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
F-53B major	-	-	-	-	<0.001	<0.001	<0.001	-	-	-

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	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	OHA_ADJ_SW36_8_280322	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	SW36			
Sampled_Date_Time	22/02/2018	17/05/2018	12/09/2018	29/09/2020	16/03/2021	29/10/2021	28/03/2022			
Lab_Report_Number	1047802	1142104	1251329	2094717	2370192	2590570	2785749			
Sample Results										
PFPrS	<0.001	<0.001	<0.001	<0.025	<0.001	0.0014	<0.001	-	-	-
PFBS	<0.001	<0.001	<0.001	<0.025	0.0017	0.0026	0.0016	-	-	-
PFPeS	<0.001	<0.001	<0.001	<0.025	0.0019	0.0028	0.0015	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.025	0.003	0.0039	0.0022	-	-	-
L-PFHxS	<0.001	<0.001	<0.001	<0.025	0.018	0.023	0.012	-	-	-
Total PFHxS [3]	<0.001	<0.001	<0.001	<0.025	0.021	0.027	0.014	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	<0.001	<0.001	<0.001	<0.025	0.017	0.011	0.0061	-	-	-
L-PFOS	<0.001	<0.001	<0.001	<0.025	0.016	0.0095	0.0058	-	-	-
Total PFOS [3]	<0.001	<0.001	<0.001	<0.025	0.033	0.02	0.012	31	2	0.13
Sum of PFHxS and PFOS [5]	<0.001	<0.001	<0.001	<0.025	0.054	0.047	0.026	-	-	-
PFECHS	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
PFBA	<0.005	<0.01	<0.005	<0.2	0.019	0.017	0.013	-	-	-
PFPeA	<0.001	<0.001	<0.001	<0.1	0.072	0.06	0.024	-	-	-
PFHxA	<0.001	<0.001	<0.001	<0.025	0.05	0.039	0.018	-	-	-
PFHpA	<0.001	<0.001	<0.001	<0.025	0.026	0.018	0.0073	-	-	-
PFOA	<0.001	<0.001	<0.001	<0.025	0.012	0.0079	0.0031	1824	632	220
PFNA	<0.001	<0.001	<0.001	<0.025	0.0048	0.0026	0.0011	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-	-
PFUnDA	<0.001	<0.001	<0.005	<0.025	<0.001	<0.001	<0.001	-	-	-
PFTrDA	-	<0.025	<0.005	<0.1	-	<0.001	<0.001	-	-	-
PFTeDA	-	<0.1	-	<0.1	-	<0.001	<0.001	-	-	-
PFDoDA	-	<0.025	<0.005	<0.1	<0.001	<0.001	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.025	<0.001	<0.001	<0.001	-	-	-
MeFOSA	-	<0.005	<0.005	<0.1	<0.001	<0.001	<0.001	-	-	-
MeFOSAA	<0.005	<0.001	<0.005	<0.025	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<0.005	<0.001	<0.005	<0.025	<0.001	<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	<0.001	-	-	-
8:2 FTS	<0.005	<0.001	<0.005	<0.1	<0.001	<0.001	<0.001	-	-	-
10:2 FTS	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
FPrPA	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
EtFOSA	-	<0.001	<0.005	<0.1	<0.001	<0.001	<0.001	-	-	-
EtFOSE	-	<0.005	<0.005	<0.1	<0.001	<0.001	<0.001	-	-	-
FPePA	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
FHpPA	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
F-53B minor	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
HFPO-DA*	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
Sum F-53B	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
ADONA	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
P37DMOA	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
F-53B major	-	-	-	-	<0.001	<0.001	<0.001	-	-	-
	-	-								

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	OHA_DPB_SW6_7_280322			
Location_Code	SW6	SW6	SW6	SW6	SW6	SW6	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]
Sampled_Date_Time	4/08/2017	1/11/2017	3/07/2018	29/09/2020	29/10/2021	28/03/2022			
Lab_Report_Number	841470	937355	1186578	2094713	2590926	2785776			
Sample Results									
PFPrS	0.023	0.042	0.013	<0.025	<0.025	0.029	-	-	-
PFBS	0.079	0.12	0.037	<0.025	0.053	0.063	-	-	-
PFPeS	0.083	0.18	0.045	<0.025	0.057	0.092	-	-	-
di-PFHxS	0.002	0.0039	<0.001	<0.025	<0.025	0.0021	-	-	-
Mono-PFHxS	0.3	0.28	0.073	0.03	0.11	0.16	-	-	-
L-PFHxS	1.6	1.8	0.48	0.19	0.86	0.95	-	-	-
Total PFHxS [3]	1.9	2.1	0.55	0.22	0.97	1.1	-	-	-
PFHpS	0.066	0.13	0.027	<0.025	0.046	0.05	-	-	-
di-PFOS	0.036	0.096	0.013	<0.025	0.039	0.051	-	-	-
Mono-PFOS	0.52	0.82	0.15	0.093	0.58	0.64	-	-	-
L-PFOS	0.86	1	0.21	0.13	0.83	0.69	-	-	-
Total PFOS [3]	1.4	1.9	0.37	0.22	1.4	1.4	31	2	0.13
Sum of PFHxS and PFOS [5]	-	-	0.92	0.44	2.4	2.5	-	-	-
PFECHS	-	-	-	-	<0.025	<0.001	-	-	-
PFBA	0.23	0.32	0.11	<0.2	0.16	0.22	-	-	-
PFPeA	1.1	1.5	0.44	0.22	0.62	0.86	-	-	-
PFHxA	1	0.96	0.32	0.14	0.39	0.62	-	-	-
PFHpA	0.32	0.47	0.16	0.073	0.23	0.31	-	-	-
PFOA	0.61	0.73	0.19	0.065	0.34	0.36	1824	632	220
PFNA	0.15	0.32	0.092	0.029	0.18	0.17	-	-	-
PFDA	0.0012	0.002	0.0011	<0.025	<0.025	0.0014	-	-	-
PFUnDA	<0.005	0.0012	<0.001	<0.025	<0.025	0.0011	-	-	-
PFTrDA	-	-	<0.025	<0.1	<0.1	<0.001	-	-	-
PFTeDA	-	-	<0.1	<0.1	<0.1	<0.001	-	-	-
PFDoDA	<0.005	<0.001	<0.025	<0.1	<0.1	<0.001	-	-	-
FOSA	<0.001	0.0012	<0.001	<0.025	<0.025	<0.001	-	-	-
MeFOSA	<0.005	<0.005	<0.005	<0.1	<0.1	<0.001	-	-	-
MeFOSAA	<0.005	<0.005	<0.001	<0.025	<0.025	<0.001	-	-	-
EtFOSAA	<0.005	<0.005	<0.001	<0.025	<0.025	<0.001	-	-	-
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	0.44	-	-	-
8:2 FTS	<0.005	0.0054	<0.001	<0.1	<0.1	<0.001	-	-	-
10:2 FTS	-	-	-	-	<0.025	<0.001	-	-	-
FPrPA	-	-	-	-	<0.1	0.0022	-	-	-
EtFOSA	<0.005	<0.005	<0.005	<0.1	<0.1	<0.001	-	-	-
EtFOSE	<0.005	<0.005	<0.005	<0.1	<0.1	<0.001	-	-	-
FPePA	-	-	-	-	<0.025	0.005	-	-	-
FHpPA	-	-	-	-	<0.025	<0.001	-	-	-
F-53B minor	-	-	-	-	<0.05	<0.001	-	-	-
HFPO-DA*	-	-	-	-	<0.05	<0.001	-	-	-
Sum F-53B	-	-	-	-	<0.1	<0.001	-	-	-
ADONA	-	-	-	-	<0.025	<0.001	-	-	-
P37DMOA	-	-	-	-	<0.05	<0.001	-	-	-
F-53B major		-		<0.001	<0.1	<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	SW4	OHA_SHW_SW4_2_021020	OHA_SHW_SW4_3_180321	OHA_SHW_SW4_4_271021	OHA_SHW_SW4_5_300322	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	SW4			
Sampled_Date_Time	4/08/2017	2/10/2020	18/03/2021	27/10/2021	30/03/2022			
Lab_Report_Number	841470	2094371	2327926	2576268	2786753			
Sample Results								
PFPrS	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFBS	<0.001	<0.001	0.0012	<0.001	<0.001	-	-	-
PFPeS	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFHxS	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
L-PFHxS	<0.001	<0.001	0.005	<0.001	<0.001	-	-	-
Total PFHxS [3]	<0.001	<0.001	0.005	<0.001	<0.001	-	-	-
PFHpS	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
di-PFOS	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
Mono-PFOS	<0.001	<0.001	0.0029	<0.001	<0.001	-	-	-
L-PFOS	<0.001	<0.001	0.0036	<0.001	<0.001	-	-	-
Total PFOS[3]	<0.001	<0.001	0.0065	<0.001	<0.001	31	2	0.13
Sum of PFHxS and PFOS [5]	-	<0.001	0.012	<0.001	<0.001	-	-	-
PFECHS	-	-	<0.001	<0.001	<0.001	-	-	-
PFBA	0.0054	0.0095	0.037	0.0085	0.0061	-	-	-
PFPeA	<0.001	<0.001	0.096	0.0035	0.0013	-	-	-
PFHxA	<0.001	0.001	0.079	0.0016	<0.001	-	-	-
PFHpA	<0.001	<0.001	0.048	0.0011	<0.001	-	-	-
PFOA	<0.001	<0.001	0.013	<0.001	<0.001	1824	632	220
PFNA	<0.001	<0.001	0.0039	<0.001	<0.001	-	-	-
PFDA	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
PFUnDA	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-
PFTrDA	-	<0.001	<0.005	-	<0.001	-	-	-
PFTeDA	-	<0.001	-	-	<0.001	-	-	-
PFDoDA	<0.005	<0.001	<0.005	<0.001	<0.001	-	-	-
FOSA	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-
MeFOSA	-	-	<0.005	<0.001	<0.001	-	-	-
MeFOSAA	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-
EtFOSAA	<0.005	<0.001	<0.001	<0.001	<0.001	-	-	-
4:2 FTS	<0.005	-	<0.001	-	-	-	-	-
6:2 FTS	<0.005	<0.001	0.0096	-	<0.001	-	-	-
8:2 FTS	<0.005	<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	-	-	<0.005	<0.001	<0.001	-	-	-
EtFOSE	<0.005	-	<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	-	-	-

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.