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AECOM

Ongoing monitoring report (2024-2025)

PFAS ongoing monitoring program - RAAF Base Tindal

16-Jun-2026
RAAF Base Tindal PFAS Lead Consultant
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PFAS ongoing monitoring program - RAAF Base Tindal

Client: Department of Defence

ABN: 68706814312

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Executive summary

Background

AECOM Australia Pty Ltd (AECOM) was engaged by the Department of Defence (Defence) to implement the per-and poly-fluoroalkyl substances (PFAS) Ongoing Monitoring Plan (OMP). The OMP is outlined in the PFAS Management Area Plan (PMAP) developed for the Royal Australia Air Force (RAAF) Base Tindal ('the base'), Northern Territory (NT). The PMAP was first published by Defence in 2019 and revised in 2025.

Objective

The objective of implementing the OMP is to provide information on changes in the location and concentrations of PFAS in groundwater, surface water and selected biota (fish and crustaceans) on-base and off-base in and around the Management Area. The data are used to assist risk management decisions by Defence to protect human health and the environment, and to inform the understanding of the effectiveness of remedial actions.

Monitoring program

AECOM completed monitoring of groundwater, surface water, fish and crustaceans between June 2024 and May 2025. The monitoring targeted PFAS at 50 groundwater wells, 13 surface water locations and two aquatic biota locations off-base.

Interpretive assessment

Data collected during the monitoring period were compared to historical data collected since 2017[1] at the nominated sampling locations.

Groundwater results

Groundwater monitoring data indicated that groundwater flows to the west across the base and continues westwards towards Katherine River, consistent with historical data. Groundwater continues to discharge into the Katherine River through seeps and preferential pathways within the Tindall Limestone Aquifer[2].

What is an 'order of magnitude'?

This refers to a number decreasing or increasing by multiples of ten. For instance, an increase from 10 to 100 is an order of magnitude increase. When assessing changes in PFAS concentrations at an individual location, all concentrations are considered when determining trends, but order of magnitude changes are discussed separately as they represent a significant change in concentrations from what was reported in the previous event.

If a change is close to established health or environmental criteria, it will also be considered significant.

The reported concentrations of PFAS in groundwater east of the Katherine River are within the same order of magnitude as historical results and show the current extent of PFAS contamination. The results suggest that the plume size is unchanged, except for Cossack, west of Katherine River, where the plume may be intermittently migrating westward during the wet season, and along the northern plume boundary east of Katherine River. In addition, there is evidence of localised contraction of the PFAS plume beneath the FTA likely in response to the completion of the soil remediation works.

The following were observed:

- Data collected over the monitoring period indicated that the PFAS groundwater plume is seasonally influenced. Locations in Cossack at the leading edge of the plume reported higher PFAS concentrations during the end of wet season.
- Groundwater data collected over the monitoring period reported detections at or marginally greater than the adopted drinking water criteria in Cossack generally during peak wet season. It is noted that the utilisation of low-level PFAS analysis, where PFAS is detected at lower concentrations than the standard method employed under the previous OMP, has resulted in some locations

[1] PFOS and PFOA and 6:2 FtS have been monitored in groundwater (at one location) and surface water (at three locations) since 2014.
[2] An aquifer is an underground layer of porous and permeable rock, gravel, sand or silt, which can contain or transmit groundwater that lies within the geology below the base.

reporting PFAS detections for the first-time, further expanding the area of PFAS contaminated groundwater. Based on geologically (Jinduckin Formation confining layer) induced groundwater flow patterns (i.e. reversal of hydraulic gradients away from the River) and the spatial distribution of measured PFAS concentrations, PFAS groundwater migration within Cossack occurs because of the westward migration of the PFAS from Katherine River during high flow (wet season). The extent of westward intrusion of River-derived groundwater is dependent on the stage of the River.

- PFAS-impacted groundwater regularly discharges into Katherine River. The concentrations of PFAS recorded during the end of dry season were higher than during wet season, when surface water runoff is a greater contributor to river flow.
- The Fire Station Area (FSA) and Fire Training Area (FTA) have undergone remediation works (soils / infrastructure groundwater). PFAS groundwater results downgradient of the FTA collected during the monitoring period show initial signs that PFAS movement from the FTA through groundwater is reducing. Due to the apparent seasonal variation in PFAS concentrations, further monitoring is required to determine the influence of the works in reducing surface water and groundwater concentrations at, and downgradient of the two key source areas.
- Base operation of the two on-base PFAS water treatment plants continue to remove PFAS from groundwater. New wellfields have been installed at both the FSA and FTA to improve the treatment plant performance and to decrease PFAS discharge from the base towards the Katherine Township and Katherine River.

Surface water results

- PFAS concentrations have decreased in Tindal Creek at the base boundary since soil remediation works at the FSA and FTA were completed. Recent soil movement between the FSA and the base runway may have temporarily increased recorded surface water PFAS concentrations.
- No changes in PFAS concentrations were observed in the Katherine River or Katherine Hot Springs over the monitoring period.
- No testing for PFAS occurred at the Katherine Community Swimming Pool during the monitoring period as the pool is currently undergoing renovations and is closed to the public. Testing will resume once the pool is reopened.

Aquatic biota results

Results for aquatic biota collected from the Katherine River during the monitoring period remain similar to previous conditions. Results from continued monitoring will be used to keep health advisory notices regarding aquatic biota consumption posted by the Northern Territory Department of Health up to date.

CSM and risk profile

The conceptual site model (CSM) describes the PFAS sources, pathways and receptors within the Management Area. The CSM was reviewed to incorporate the monitoring data collected between June 2024 and May 2025. This revision of the CSM considered the following:

- **PFAS remediation at the FTA and FSA:** It is anticipated that continued decreases in PFAS concentrations in surface water and groundwater will be observable in the short to long-term (i.e. reduced mass discharge) resulting from soil remedial works undertaken.
- **Seasonal influence on PFAS concentrations in groundwater:** During the wet season, groundwater elevations increase on-base to levels that interact with PFAS in soil at key source areas. Seasonal saturation of PFAS impacted soils in source areas frees PFAS compounds from soil particles and contributes to PFAS in groundwater. Currently, there is not enough data to understand the seasonal impact this interaction has on PFAS concentrations in groundwater throughout the Management Area.
- **Receptor exposure:** Westward migration of the PFAS plume into Cossack and northward east of Katherine River resulted in concentrations that exceed drinking water criteria in these areas. These areas currently include the use of private drinking water and irrigation bores. With revised drinking water guideline values (NHMRC, 2025) adopted for assessment, a revision of potential receptor exposure pathways is warranted, particularly for groundwater users.

While the current CSM adequately describes the sources, pathways and receptors within the Management Area, additional investigation is being conducted to better predict how individual bores within Cossack respond to changing conditions during the wet and dry seasons and the potential expansion of the PFAS plume further to the west of the Management Area.

In summary, new historical maximums have been detected on and off-base within this monitoring period. These are typically within the same order of magnitude as historical results. Future monitoring under the OMP is required to evaluate seasonal variations and the potential for plume migration to the west and north of the Management Area.

Changes in PFAS concentrations reported in groundwater, surface water and aquatic biota will continue to be evaluated through future monitoring and reporting. No new source of PFAS contamination or transport pathways were identified during the reporting period.

Conclusions

The following conclusions are based on the data collected during the monitoring period:

- The monitoring conducted over the current period has met the objectives of the OMP.
- The findings of the interpretive analysis were consistent with the risk profile for the Management Area. However, there is evidence of a potential change in risk in locations within and west of the Management Area in Cossack, west of Katherine River, and in the vicinity of the northern plume boundary east of Katherine River. PFAS concentrations in groundwater have been observed in locations not previously detected and / or above the drinking water criteria or have reported new maximum concentrations.
- Adoption of the revised drinking water guideline values has increased the detection and exceedance of PFAS along the plume boundary to the west and north, potentially changing the risk at additional properties within Cossack.
- Reported PFAS concentrations in surface water continue to be observed at lower concentrations than pre-soil remediation reported concentrations the base boundary within Tindal Creek, corresponding to soil remediation actions at the FSA and FTA.
- The groundwater monitoring network does not sufficiently examine the extent of the northern plume boundary, however, this area is undeveloped land and the risk to individual bore users remains low.

Ongoing monitoring of groundwater and surface water as part of the OMP (Defence, 2021b), which is currently being amended, will continue to monitor the nature and extent of PFAS, potential migration and associated changes to the risk profile.

Abbreviations

Abbreviation	Term
AECOM	AECOM Australia Pty Ltd
AFFF	Aqueous Film Forming Foam
AHD	Australian Height Datum
BOM	Bureau of Meteorology
Coffey	Coffey Environments Australia Pty Ltd
CSM	Conceptual Site Model
CSR	Contaminated Sites Records
DCMM	Defence Contamination Management Manual
Defence	Department of Defence
DEPWS	Department of Environment, Parks and Water Security
DSI	Detailed Site Investigation
DO	Dissolved oxygen
DoH	Department of Health
EC	Electrical conductivity
ERA	Ecological Risk Assessment
FSA	Fire Station Area
FSANZ	Food Standards Australia New Zealand
FTA	Fire Training Area
GWE	Groundwater elevation
HEPA	Heads of Environment Protection Authority
HHRA	Human health risk assessment
LOR	Limit of reporting
MEOMS	Mechanical Equipment Operations Maintenance Section
MW	Monitoring well
NEMP	National Environmental Management Plan
NHMRC	National Health and Medical Research Council
NT	Northern Territory
NT Health	Northern Territory Department of Health
OMR	Ongoing Monitoring Report
OMP	Ongoing Monitoring Plan
PAC	Powdered activated carbon
PFAS	Per- and poly-fluoroalkyl substances
PFBS	Perfluorobutanesulfonic acid
PFHpA	Perfluoroheptanoic acid
PFHpS	Perfluoroheptane sulfonic acid

Abbreviation	Term
PFHxA	Perfluorohexanoic acid
PFHxS	Perfluorohexanesulfonic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
PFPeA	Perfluoropentanoic acid
PFPeS	Perfluoropentane sulfonic acid
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance and Quality Control
RAAF	Royal Australian Air Force
RAP	Remediation Action Plan
SAQP	Sample and Analysis Quality Plan
SER	Sampling Events Report
SW	Surface Water
SWL	Standing Water Level
WTP	Water Treatment Plant

List of units

Unit	Definition	Unit	Definition
°C	Degrees Celsius	mg	Milligrams
cm	Centimetres	mV	Millivolts
L	Litres	µg	Micrograms
mm	Millimetres	µS	Microsiemens
m	Metres	g	grams
km	Kilometres	mbTOC	metres below top of casing
ML	Megalitres	mAHD	metres Australian Height Datum
kg	Kilograms		

1.0 Introduction

1.1 Preamble

AECOM Australia Pty Ltd (AECOM) was engaged by the Department of Defence (Defence) to implement the per-and poly-fluoroalkyl substances (PFAS) Ongoing Monitoring Plan (OMP), (Defence, 2025a) at RAAF Base Tindal ('the base'), Northern Territory (NT) (**Figure F1** in **Appendix A**) which includes preparation of this Ongoing Monitoring Report (OMR). The monitoring undertaken over a one-year period (2024 – 2025), targeted the measurement of PFAS concentrations in a range of environmental media at selected locations on-base and in surrounding off-base areas as defined in the OMP (locations shown on **Figure F2** to **Figure F5**, **Appendix A**). The environmental media sampled and analysed comprised of surface water, groundwater and biota.

In order to meet the objectives of the OMP, the monitoring was undertaken in accordance with the base *Sampling Analysis and Quality Plan* (SAQP) relevant at the time of sampling (Revision 6 and Revision 0), developed and updated by AECOM (AECOM, 2023) (AECOM, 2025a). The most recent version, Revision 0 (AECOM, 2025a) is provided in **Appendix B** and includes consideration of data collected during other projects implemented under the base's PFAS Management Action Plan (PMAP) (Defence, 2025b), in addition to the OMP scope.

This OMR has been prepared in accordance with the Ongoing Monitoring Program Reporting Guidance (Defence, 2024) and is based on monitoring data collected during a 12-month period, with data actively collected between June 2024 and May 2025. It is noted that the data collected in concurrent programs of work delivered by Defence, outside of this current monitoring period, were also used to further refine the understanding of the conceptual site model (CSM) for the base and Management Area. A summary of relevance of these ancillary works to the OMP, is presented in **Section 6.0**.

The overarching objective of the OMP (Defence, 2025a) is to provide information on changes in the nature and extent of PFAS within the environment on-base and in surrounding areas off-base, in and towards Katherine Township and in the Katherine River. The Management Area is presented in **Figure F1** in **Appendix A**. The data are also required to identify potentially elevated risks to receptors, or potential future receptor risks and to assist in risk management decisions by Defence and Territory Government authorities to protect human health and the environment, and to inform the understanding of the effectiveness of remedial actions.

1.2 OMR purpose

The OMR is a critical resource to communicate and inform key stakeholders, including the local community, on the findings and outcomes of PFAS investigation related activities and associated monitoring results in and surrounding the base.

Assessing changes in the distribution, concentration, and transport (pathways and flux) of PFAS impacts against appropriate guideline values provides an:

- Evidence base for targeted and effective risk management decision making to protect human health and environmental receptors
- Early warning that additional management of PFAS contamination may be required to address first time presence of PFAS in areas not previously understood to be affected by PFAS.

In summary, the monitoring data has been evaluated to assess environmental variability, trends in PFAS concentrations and changes to the known risk profile, to inform review recommendations for the periodic update of the OMP (Defence, 2025a) and PMAP (Defence, 2025b).

1.3 Scope

The scope of work for this OMR includes the assessment of nature and distribution of PFAS concentrations, based on data collected over the preceding 12-month period (May 2024 to April 2025) under the OMP and other base investigations. This includes the evaluation of data reported during the monitoring period in the following OMP factual reports provided in **Appendix B**:

- RAAF Base Tindal – Dry Season Sampling Events Report (SER) 2024 (AECOM, 2025b)
- RAAF Base Tindal – Start of Wet Season SER 2024 – 2025 (AECOM, 2025c)
- RAAF Base Tindal – End of Wet Season SER 2025 (AECOM, 2025d).

2.0 Site setting

2.1 Site description

Table 1 summarises the base identification and setting presented in the PMAP (Defence, 2025b).

Table 1 Site identification and setting summary

Element	Description
Site ID	0990, RAAF Base Tindal
Location	The base is located within a rural, agricultural, and natural land setting, approximately 15 km east of the township of Katherine and accessed by Stuart Highway as shown in **Figure F1** in **Appendix A**. The Katherine Township is the fourth largest urban area in the NT with a population of 9,643 (2021) (Australian Bureau of Statistics, 2021). The town is set on the banks of the Katherine River with residential areas spread along the banks up and down Stuart Highway bridge, predominantly on the eastern side of the river.
Regional climate	The climate of the Katherine region is distinguished by a wet (monsoonal) season and the dry season. The wet season normally lasts from October/November to March/April, and consists of periodic heavy rains in hot and humid conditions with an annual average rainfall of 1063 mm. The dry season normally lasts from April/May to September/October, which consists of mild to hot and mostly rainless weather.
Topography, geology and hydrogeology	The base is situated upon a flat landscape with some minor undulations, rocky outcrops and sub-terranean depressions or sinkholes, which can result in direct connectivity between surface and groundwater. The flat topography of the base reflects the gradient of the wider region. On-base ground elevations range between 130 and 140 metres relative to the Australian Height Datum (m AHD). The township of Katherine and the base are located within the geological formation known as the Daly River group, consisting of Cretaceous sediments, Junduckin Formation of siltstone/sandstone, the Tindall Limestone Aquifer and early to Pre-Cambrian bedrock. The Junduckin Formation overlies the Tindall Limestone Aquifer to the southwest of the base, becoming a confining layer and restricting recharge. The geology was formed in shallow water in the subsiding Daly River basin. The rocks of the Tindall Limestone unit have gentle depositional dips with ‘slump structures’ and minor faults. The Tindall Limestone Aquifer provides high yields of water suitable for multiple uses, including drinking water. The Tindall Limestone Aquifer is unconfined within the base and township area with preferential flows that are a result of the karst nature of the aquifer. Whilst localised vertical groundwater flow will be dependent upon the different matrices, fractures and conduit permeability present, lateral groundwater flow direction is predominantly within the subject area is westerly towards the Katherine River. It is noted that previous investigations conducted within the PFAS Management Areas has indicated that the Tindall Karst Aquifer has complex characteristics due to the high heterogeneity of hydraulic properties and is therefore difficult to model and predict. Groundwater elevations within the Tindall Limestone Aquifer in the project area range between 90 and 130 m AHD.

Element	Description
Surface water	The Katherine and Tindal districts are drained in the east by tributaries of the Roper River and in the west by tributaries of the Daly River. The main surface water drainage on-base is Tindal Creek. Tindal Creek flows from the eastern portion of the base, passing south of the runway, crossing the Stuart Highway twice and entering the Katherine River downstream of the township. Tindal Creek is ephemeral and does not typically flow between May and November (the dry season). Waterholes are present across the area but only hold water for a short period of time after the wet season. Katherine River is perennial and receives surface and groundwater from the localised area, including the base, and is therefore a receptor of PFAS contamination sourced from the base.
Vegetation	The terrestrial environment surrounding the base consists of large areas of bushland and open forest, with the majority characterised by Darwin box and/or bloodwoods woodland with sorghum, white grass, and tussock grasses. Many of the savannah grasses are shallow rooted annuals that grow in response to rainfall. Fruiting and flowering trees and plants are present in the riparian areas. Patches of irrigated grass lawns are found in the landscaped areas at the base. To the west of the base are small scale mango farms, rural residential properties and a quarry.
Current and previous land use (including AFFF use)	Katherine's previous and current land uses are characterised by a combination of residential, educational, commercial and recreational areas which dominate the Katherine Township and directly adjoining lands. Agricultural land uses, predominantly pastoral livestock grazing, grains and fruit crops, extend along the Stuart Highway to the east and pastoral livestock land to the north and south of the highway. The Cutta Cutta Caves Nature Park is a classic example of a Karst landscape and is located directly southeast of the base and adjoins the base on the south-eastern boundary. There is another small portion of private pastoral property to the south adjoining the base and nature park. RAAF Base Tindal was formally established in 1988 as a home base for the No.75 Squadron. Since its inception as 'Carson Airfield' in 1942, the base has undergone multiple extensions and transformations between the 1950s and 1970s. The base is currently undergoing large scale redevelopment and construction programs to modernise and increase capacity of its current facilities to meet Defence alliance requirements. Uncontrolled and controlled discharge of Aqueous Film Forming Foams (AFFF) during handling and storage for both training and formal applications have been carried out historically at the base (Coffey, 2018a). The use of AFFF on-base were predominantly at six on-base locations which were designated by Coffey (Coffey, 2018a) as either a Confirmed or Likely PFAS presence and now are listed within Defence's Contaminated Sites Register (CSR). These six source areas are listed in **Section 2.3** below.

2.2 PFAS management area

The PFAS Management Area consists of on-base source areas and off-base receptors, where management actions, including those where institutional controls have been adopted, or are identified / planned for action and / or will be managed in accordance with the PMAP (Defence, 2025b), as identified in the HHRA (Coffey, 2018c). The PFAS Management Area comprises five key Management Zones which are monitored for changes in PFAS impact and / or receptor exposure, these extend into the Katherine Township and are outlined below:

- **Zone 1**: Groundwater PFAS concentrations greater than drinking water and recreational water criteria
- **Zone 2**: Groundwater PFAS concentrations greater than drinking water criteria
- **Zone 3**: Katherine River: water downstream of surface water monitoring location SW110
- **Zone 4**: Town water supply (Power & Water): includes treated bore water and water from Katherine River
- **Zone 5**: Groundwater PFAS concentrations less than drinking water criteria.

Each Management Zone has tailored precautionary advice for residents to minimise exposure to PFAS. The PFAS Management Area Zones 1, 2 and 5 are shown on **Figure F1** (**Appendix A**).

2.3 Source areas

The PMAP (Defence, 2025b) identified the following six on-base PFAS contamination source areas, as shown on **Figure F1** (**Appendix A**):

- Former Fire Training Area (FTA): PFAS present in soil, groundwater, and surface water.
- Fire Station Area (FSA): PFAS present in soil, groundwater, and surface water.
- Mechanical Equipment Operations Maintenance Section (MEOMS) comprising Vehicle and Equipment maintenance areas: Confirmed low concentrations of PFAS present in groundwater and interceptor drains.
- Fuel Farm 1: Confirmed low concentrations of PFAS present in groundwater and retention pond.
- Fuel Farm 2: Confirmed low concentrations of PFAS present in groundwater and retention pond.
- Solid wastes in the on-base Sewage Treatment Plant (considered to be minor contributions to overall mass).

Additional investigation at four of the source areas confirmed that these were not key or significant sources requiring further remediation (Coffey, 2018b). However, it is noted that remediation of PFAS impacted soil has been conducted at two source areas:

- FSA (completed): remedial works were conducted between July 2022 and July 2023. Remedial works comprised the excavation and on-Base treatment and reuse of PFAS impacted soils.
- Former FTA (completed): remedial works were conducted between August 2022 and November 2024. Remedial works comprised the excavation and on-Base treatment and reuse of PFAS impacted soils, with some soils with combined Perfluorooctanesulfonic acid (PFOS) and Perfluorohexanesulfonic acid (PFHxS) concentrations greater than 20 mg/kg removed from site for destruction. The laydown area north of the remediation extent was resurfaced with topsoil and hydroseeded during the dry season to prevent erosion and water pooling.

Additional information regarding remedial actions conducted at the base and the consequence for changes in PFAS impacts across the PFAS Management Area are provided in **Section 6.1**.

3.0 Sampling and analytical scope and methodology

3.1 SAQP revision history

A number of amendments have been made to sampling locations and/or frequencies which were originally detailed within the RAAF Base Tindal SAQP from Revision 6 (AECOM, 2023) to the current version Revision 0 (AECOM, 2025a) (which has been included in **Appendix B**). These amendments are summarised in **Table 2** below.

Table 2 Summary of SAQP amendments between Rev 6 (AECOM, 2023) and Rev 0 (AECOM, 2025a)

Rev 6 (December 2023) to Rev 0 (April 2025)
Groundwater (off-base private bores - Cossack)
• Revised to monthly monitoring in the wet season, and once during the dry season at 18 properties.
Groundwater (on- and off-base)
• Biannual sampling of all on- and off-base monitoring wells • Replacement of MW734 with MW133 • Removal of MW235 from sampling program • Replacement of POT119 with MW814 • Replacement of POT122 with MW815.
Surface water (on- and off-base)
• Quarterly sampled surface water locations (OTH008, SW100 and SW108) changed to biannual sampling.
Aquatic biota (off-base)
• No change.

3.2 Sampling schedule

The RAAF Base Tindal SAQP Revision 6 (AECOM, 2023) to Revision 0 (AECOM, 2025a) provide the sampling schedule and rationale for this reporting period between June 2024 to May 2025. The latest SAQP applicable to the most recent monitoring event (April – May 2025) is summarised in **Table 3** below, noting that Revision 6 SAQP (AECOM, 2023) was applied to the sampling events between June 2024 – May 2025. In essence, the adopted SAQP modifications consisted of replacing inaccessible monitoring wells and changing the frequency of sampling for selected locations.

Table 3 SAQP (Revision 0) sampling schedule (AECOM, 2025a)

Sample matrix	No. of sample locations	Frequency	No. of monitoring events per year	Approximate monitoring period
Groundwater	18	Monthly during wet season and once in dry season	7	• Wet season (November–April) • Dry season (August)
	1	Annual	1	• End of dry season (September-October)
	50	Biannual	2	• End of wet season (March-April) • End of dry season (September-October)
Surface water	6	Twice in wet season	2	• Start of wet season (November-December) • End of wet season (March-April)

Sample matrix	No. of sample locations	Frequency	No. of monitoring events per year	Approximate monitoring period
				Determined by when water is observed in on-base drains and Tindal Creek
	1	Annual	1	• End of dry season (August-October)
	6	Biannual	2	• End of wet season (March-April) • End of dry season (September-October)
Biota	Multiple samples from 2 locations	Annual	1	• End of dry season (August-October)

The list of surface water locations, groundwater monitoring wells, and biota locations that were sampled as part of the above monitoring events are listed in **Section 3.3**. The rationale for the well and location selection is summarised in the SAQP in **Appendix B** (AECOM, 2025a).

3.3 Summary of OMP works completed between 2024 and 2025

A summary of the monitoring works undertaken during the current monitoring period between June 2024 and May 2025, is presented in **Table 4.** OMP works were undertaken in accordance with the relevant SAQP with exception of deviations from the SAQP, which are summarised in **Section 3.4**.

The location of the groundwater samples collected in this monitoring period are shown on **Figure F2** and **F3** in **Appendix A**. The surface water and biota sampling locations collected during this monitoring program are presented on **Figure F4** and **Figure F5** in **Appendix A**.

Table 4 Summary of OMP scope of works between June 2024 and May 2025

Event	Relevant SAQP	Sampling locations frequency	Number of sampling locations
Dry season August - October 2024	Revision 6	Quarterly surface water	3
		Once in dry season private bore	18
		Biannual groundwater	3
		Annual groundwater	28
		Biannual surface water	3
		Annual biota	2
Start of wet season November 2024 - January 2025	Revision 6	Twice in wet season surface water	6
		Quarterly surface water	2
		Monthly in wet season groundwater	18
End of wet season February - April 2025	Revision 6	Monthly in wet season groundwater	18
		Biannual surface water	6
	Revision 0	Twice in wet season surface water	6
		Biannual groundwater	50

3.4 Deviations from the OMP

Sampling deviations and their potential impact on the program are summarised below in **Table 5**.

Table 5 Deviations to OMP SAQP

OMP / SAQP requirement	Deviation	Potential impact on OMP
Dry season (October - December 2024) (AECOM, 2025b)		
Collection of water quality parameters from surface water sampling locations.	Water quality parameters were not collected at SW151, which is collected during the aquatic biota sampling event.	Minor impact – a review of historical water quality parameter data indicated that there is minimal variance in parameter readings across the four Katherine River sampling locations, therefore collection from the other three locations should provide sufficient data for interpretive purposes.
Collection of three quarterly surface water samples.	OTH008 – the local public swimming pool, was unable to be accessed due to the facility being closed for renovations.	No impact to the program as sample collection from OTH008 monitors for potential health risks from PFAS within the swimming pool, therefore there are no risks to the public while the pool is not in operation.
Collection of 18 '*once in dry season*' private bore samples in August.	Samples for the dry season event were collected late in October 2024 due to a delay in signed access letters.	No impact as October 2024 results are still considered to reflect dry season conditions due to the limited to no rainfall that occurred between August and October 2024.
Gauging and sample collection of 28 annual groundwater locations.	23 annual groundwater locations were sampled. Five annual groundwater locations (or their SAQP listed alternative) were not able to be sampled: • MW117, and alternative location MW118, were both found to be dry. • MW134 could not be sampled due to root blockage. • MW138 could not be sampled due to root blockage. • MW235 was decommissioned prior to soil remediation work commenced at the former FTA. The SAQP does not list a suitable alternative well. • POT119, no access from the landowner provided since April 2021. A new groundwater monitoring well MW815 was installed in November 2024 to substitute data historically collected from POT119.	MW117 – Potential data gap for concentrations of PFAS on the western boundary track. MW130 (long screened interval like MW117) to the north was able to be sampled, reducing the impact of this data gap (2 km spatial data gap), though likely represents a lower PFAS concentration area. MW117 and MW130 overlap in screen intervals from 1 to 14.5 metres below ground level (m bgl). MW134 – Potential data gap for concentrations of PFAS north-west of the plume. MW135 (long screened interval like MW134) to the north was able to be sampled, reducing the impact of this data gap. MW134 and MW135 are screened the same from 2.5 to 19 m bgl. This well has been subsequently repaired and sampled during the 2025 end of wet season monitoring event. MW138 – Potential data gap for concentrations of PFAS centre of the plume. However, MW137 (long screened interval like MW138) to the north was able to be sampled, reducing the impact of this data gap. MW138 and MW137 are screened the same from 2 to 18 m bgl. This well has been subsequently repaired and sampled during the 2025 end of wet season monitoring event. MW235 – minimal data gap. MW235 has been decommissioned and has been removed from the OMP (Defence, 2025a) due to the location being within the PMAP Soil RAP remediated area and drilling a new well may compromise the cap. Significant data gap – POT119 is a sentinel well within private property along Gorge Rd, at the northern boundary of the plume. PFAS has historically been reported less than the laboratory limit of reporting (LOR). Due to ongoing access restrictions, a replacement monitoring well (MW815) has been installed near this sampling location on public land to address this data gap, however, the new well was not installed prior to this sampling event. The newly installed well was sampled during the 2025 end of wet season monitoring event, and MW815 has now replaced POT119 within the SAQP (AECOM, 2025a) and the revised OMP (Defence, 2025a).
Alternative location sampled for one annual groundwater location.	MW734, and alternative location MW132, were impacted by roots and a water sample could not be obtained.	Minor data gap – Nearby monitoring location MW133, which also has a long screened interval installed similar to MW734, was able to be sampled. MW734 and MW133 overlap in screened intervals from 3.2 to 19.7 m bgl, however, noting that MW734 is screened down to 80.9 m bgl. As PFAS concentrations tend to accumulate within the vadose zone, results from MW133 can be used to minimise the data gap. The intent of this cross-gradient well is to capture the northern plume boundary, along the northern base boundary, to ensure PFAS concentrations and thus the risk to the community to the north remain low.

OMP / SAQP requirement	Deviation	Potential impact on OMP
Additional 19 groundwater locations gauged and/or sampled.	MW136 is a groundwater monitoring well that is to be added to the upcoming OMP revision and therefore was included as part of the October-December 2024 monitoring event.	Additional data point – MW136 is located between the northern plume edge and nearby private bore users. Sampling from this location as part of the OMP will increase the resolution of the sentinel well network in tracking PFAS migration that could potentially impact nearby private bore users.
	MW118I, MW118D, MW119, MW130, MW131 are planned to be added to the upcoming OMP revision and were therefore included as a part of the October - December 2024 monitoring event.	Additional data points – These wells will monitor PFAS mass flux across the base boundary as they are located on the plume centreline and add overall data resolution to the program. MW119 was recorded as dry so not sampled on this occasion.
	MW106 and MW801S are planned to be added to the upcoming OMP revision and were therefore included as a part of the October - December 2024 monitoring event.	Additional data points – These wells will monitor PFAS mass flux downgradient of the former FTA on the base boundary, providing additional monitoring locations to track changes in PFAS concentrations in groundwater resulting from completed soil remediation works.
	MW109, MW109D, MW111 and MW111D are to be added to the upcoming OMP revision and therefore was included as part of the October-December 2024 monitoring event.	Additional data points – These wells will monitor PFAS mass flux downgradient of the FSA on the base boundary, providing additional monitoring locations to track changes in PFAS concentrations in groundwater resulting from completed soil remediation works.
	MW146, MW802S, MW802I and MW802D are planned to be added to the upcoming OMP revision and were therefore included as a part of the October - December 2024 monitoring event.	Additional data points – These wells will monitor the PFAS concentrations in the FSA source area providing additional monitoring locations to track changes in PFAS concentrations in groundwater resulting from completed soil remediation works.
	MW803S, MW803I and MW803D are planned to be added to the upcoming OMP revision and were therefore included as a part of the October - December 2024 monitoring event.	Additional data points – These wells will monitor PFAS concentrations in the former FTA source area providing additional monitoring locations to track changes in PFAS concentrations in groundwater resulting from completed soil remediation works.
Collection of three biannual groundwater samples.	POT122 was not able to be sampled. AECOM have not been able to gain access to the property since January 2022. A new groundwater monitoring well has been installed in November 2024 (MW814) to substitute data historically collected from POT122.	Significant data gap – POT122 tracks PFAS contamination in groundwater in the Emungalan area west of Katherine River where known PFAS impacts have been previously documented. Replacement monitoring well MW814 was installed near this sampling location to address this data gap, and was sampled during the biannual late wet season event in May 2025. This location has been subsequently added as a replacement location for POT122 in the revised Rev 0 SAQP (AECOM, 2025a).
Collection of annual groundwater samples within the end of dry season months (September-October).	MW403 data point to be used for interpretation was collected in December 2024: MW403 (off-base) results from October 2024 reported a new exceedance (1.34 µg/L) of the drinking water guideline for PFOS+PFHxS. This result was an order of magnitude greater than the historical data collected at this location. The monitoring well was re-sampled on 9 December 2024 and reported a concentration of 0.02 µg/L which is consistent with historical results. Consequently, the initial MW403 concentrations are excluded from further consideration and are replaced with the December 2024 reported concentrations.	Minor impact – MW403 was technically sampled during the 'start of wet season' (December 2024) rather than the 'end of dry season' (September-October months), results from the December sampling are still considered to reflect the dry seasons conditions, given the limited to no rainfall reported leading up to December 2024. Groundwater elevation gauging was conducted between the two sampling events to determine the appropriateness of using data collected in December as a part of the dry season data set. Groundwater levels increased by 0.229 m AHD between events, indicating that early wet season rain events did have a minor impact on water levels at MW403. However, it is not anticipated that the observed change in groundwater level would have diluted PFAS concentrations back to historical levels within the time between when samples were collected.
Use of National Institute of Measurement (NMI) Sydney as secondary laboratory.	During the October 2024 event, National Association of Testing Authorities (NATA) accredited laboratory ALS Environmental Pty Ltd (ALS) Brisbane was used as secondary laboratory instead of NMI as per SAQP.	No impact – The intent of the secondary laboratory is to ensure the results are repeatable when conducted by a different laboratory using different equipment. This ensures both the collected samples and the laboratory equipment utilised provide similar results, indicating both the sample methods and the laboratory equipment are adequate for providing accurate results. Therefore, the use of ALS Brisbane instead of NMI as the secondary laboratory has no material impact on the resulting data quality.
Collection of surface water sample from OTH008.	OTH008 was unable to be sampled due to the swimming pool being closed for renovations.	No impact to the program as sample collection from OTH008 monitors for potential health risks from PFAS within the swimming pool, therefore there are no risks to the public while the pool is not in operation.
Analysis of all samples for PFAS full suite standard analysis (LOR is 0.01 µg/L).	A select number of Cossack private property sample locations were selected for PFAS full suite low-level analysis (LOR of 0.002 µg/L).	No impact – additional information as PFAS low-level analysis allows for further understanding of PFAS distribution laterally to the west of Katherine River.

OMP / SAQP requirement	Deviation	Potential impact on OMP
Use of National Institute of Measurement (NMI) Sydney as secondary laboratory.	During the December 2024 event, National Association of Testing Authorities (NATA) accredited laboratory ALS Environmental Pty Ltd (ALS) Brisbane was used as secondary laboratory instead of NMI as per SAQP.	No impact – The intent of the secondary laboratory is to ensure the results are repeatable when conducted by a different laboratory using different equipment. This ensures both the collected samples and the laboratory equipment utilised provide similar results, indicating both the sample methods and the laboratory equipment are adequate for providing accurate results. Therefore, the use of ALS Brisbane instead of NMI as the secondary laboratory has no material impact on the resulting data quality.
End of wet season (February - May 2025)		
Collection of 50 biannual groundwater samples.	Collection of 46 of 50 groundwater samples: • MW117, MW118 and MW119 were unable to be sampled due to root blockages. • MW131 was not sampled as it has been destroyed.	MW117 – Potential data gap for concentrations of PFAS on the western boundary track. As a substitute, MW130 to the north and MW118I and MW118D to the south were able to be sampled, reducing the impact of this data gap (2km spatial data gap). MW118 – Potential data gap for concentrations of PFAS on the western boundary track. However, MW118I and MW118D were accessed and sampled, reducing the impact of this data gap. MW119 – Potential data gap for concentrations of PFAS on the western boundary track. However, MW118I and MW118D were accessed and sampled (located North of MW119), reducing the impact of this data gap. MW131 – Potential data gap for concentrations of PFAS leaving the base. However, MW130 that is situated on the same base boundary road was accessed and sampled, reducing the impact of this data gap.
Alternative location sampled for biannual groundwater locations	• POT119 was unable to be sampled. MW814 has been installed to replace the location. • POT122 was unable to be sampled. Nearby well MW815 was sampled instead.	POT119 and POT122 are on private properties and no signed access agreements are currently in place. Due to ongoing access issues, and to continue monitoring the risk profile in this area, MW814 and MW815 were installed to fill this data gap.
Collection of three quarterly surface water samples.	Collection of two of three surface water samples: • OTH008 was unable to be sampled. • SW108 and SW153 were sampled a month early.	No impact to the program as sample collection from OTH008 monitors for potential health risks from PFAS within the swimming pool, therefore there are no risks to the public while the pool is not in operation. SW108 & SW153: No impact as sampling locations have been changed to biannual under Rev 0 SAQP (AECOM, 2025a).

4.0 Quality assurance and quality control

The validation of data presented and interpreted in this report has been previously completed and discussed within the individual SER's provided in **Appendix B**.

Data validation procedures employed in the assessment of the field and laboratory quality assurance and quality control (QA/QC) data indicated that the overall quality of the analytical data produced is acceptably reliable for the purpose of this OMR. An examination of sampling analysis data compared to the data validation findings did not indicate any results that required flagging for potential inaccuracies.

AECOM considers the data obtained during the current monitoring period, along with the historical data assessed, to be representative of the on- and off-base conditions at the time of monitoring and to be suitable for the temporal assessment of the data.

All data collected during this event have been reviewed and uploaded to the Defence ESdat database in accordance with Defence Contamination Management Manual (DCMM) (Defence, 2021a) Annex L requirements.

5.0 Assessment criteria

PFAS screening values have been adopted for groundwater and surface water from the Defence OMP (Defence, 2025a) and are derived from the following documents:

- HEPA, 2025. PFAS National Environmental Management Plan (PFAS NEMP 3.0) (HEPA, 2025)
- Department of Health (DoH), 2019. Health Based Guidance Values for PFAS for use in investigations in Australia. September 2019 (DoH, 2019)
- National Health and Medical Research Council (NHMRC), 2019. Guidance on PFAS in Recreational Water. August 2019 (NHMRC, 2019)
- National Environment Protection (Assessment of Site Contamination) Measure 2013 (ASC NEPM) (National Environment Protection Council (NEPC), 2013).

5.1 Groundwater and surface water

Adopted PFAS screening values for groundwater and surface water are provided in **Table 6**.

Table 6 Summary of adopted screening criteria for groundwater and surface water

Human health receptors			
Pathway	**Compound**	**Criteria**	**Comment / reference**
Drinking water	PFOS	0.008 µg/L	The values presented in the PFAS NEMP 3.0, 2025 are from DoH 2019, which published final health-based guidance values for PFAS for use in site investigations in Australia. DoH utilised the total daily intake (TDI) for PFOS and PFOA from Food Safety Australia and New Zealand (FSANZ, 2017) and the methodology described in Chapter 6.3.3 of the NHMRC Australian Drinking Water Guideline (ADWG) to determine drinking water criteria values. This report has adopted the revised ADWG (NHMRC, 2025), which is discussed further in **Section 5.1.1**. *All groundwater and surface water results will be compared to these criteria.*
	PFHxS	0.03 µg/L	
	Perfluorooctanoic acid (PFOA)	0.2 µg/L	
	Perfluorobutane sulfonic acid (PFBS)	1 µg/L	
Recreational use	PFOS+PFHxS	2 µg/L	The values presented in the PFAS NEMP 3.0, 2025 are from the NHMRC guidance on the assessment of PFAS in surface water released in August 2019. Rather than adopting an ingestion rate of 0.2 L of water per day (as per the ADWG formula), NHMRC adjusted this rate with consideration of an event frequency (150 events / year) to calculate an annual ingestion rate of 30 L per year. *All groundwater and surface water results will be compared to these criteria.*
	PFOA	10 µg/L	

Ecological receptors			
Pathway	**Compound**	**Criteria**	**Comment / reference**
Freshwater	PFOS	0.00023 µg/L	These values are from the PFAS NEMP 3.0 (HEPA, 2025). The 99% level of protection has been applied for slightly to moderately disturbed ecosystems. This approach is adopted for chemicals that bioaccumulate and biomagnify in wildlife. For the purposes of preliminary screening of analytical water results, the laboratory LOR will be adopted rather than sole use of the criteria value.
	PFOA	19 µg/L	

Note: HEPA (2025) notes that the 99% species protection level for PFOS is close to the level of detection. Agencies may wish to apply a 'detect' threshold in such circumstances rather than a quantified measurement. The laboratory PFOS limit of reporting (LOR) adopted in this report is 0.001 µg/L.

Consistent with the OMP (Defence, 2025a), the assessment of groundwater and surface water has considered both drinking water and recreational water usage for both environmental values due to the usage behaviours by identified human receptors associated with both on- and off-base areas.

The drinking water guideline value has been applied to surface water as the town water supply is partially sourced from surface water from the Katherine River, and the interaction between surface and groundwater due to groundwater expressing through springs and surface water infiltrating into groundwater through sinkholes. The recreational water guideline value has also been applied to groundwater due to groundwater expressing through springs and the use of groundwater extraction for irrigation and recreational use, such as the filling of private swimming pools and potentially public swimming pools.

5.1.1 Revised drinking water guideline values

The drinking water guideline values were reviewed by NHMRC between 2023 and 2025, which has resulted in new and revised health-based guideline values (refer **Table 6** above) and advice to reduce health risks from exposure to PFAS in drinking water (NHMRC, 2025). Notably, the updates include:

- Separate guideline values of PFOS and PFHxS
- Reduced guideline values for PFOS, PFHxS, and PFOA
- Reduced guideline value for PFOS below the standard laboratory testing LOR (0.01 µg/L), requiring a low-level PFAS testing to adequately assess the new PFOS guideline value (0.008 µg/L)
- A new guideline value for PFBS.

During the sampling period of June 2024 and May 2025, the guidelines were in draft and yet to be adopted. However, as a conservative approach, low-level PFAS analysis was conducted with consideration of the incoming guidelines likely to be below standard LORs and adopted as the drinking water criteria in future reviews. Locations were selected for low-level PFAS testing based on:

- Historical PFAS analytical results consistently reported below the standard PFAS laboratory LORs at sentinel locations along the plume boundary, or
- Sampling locations located west of the Katherine River and on private properties (refer to the Cossack sampling deviation addressed in **Table 5**).

Locations within PFAS Management Zone 1 and Zone 2 were not considered, as precautionary advice to the Katherine community to not use groundwater for potable water uses has been well communicated since implementation of the PFAS Monitoring Zones (Coffey, 2018c) and acknowledged by the community through responses to water use surveys.

A summary of locations assessed for low-level PFAS testing is summarised below in **Table 7**.

Table 7 Low-level PFAS testing sample locations

Rationale	Sampling Location ID
Historical concentrations < LOR at sentinel locations along the plume boundary	MW133, MW136, MW142, MW144, MW815, OTH111, OTH117, OTH118, OTH119
West of Katherine River on private properties	POT111, POT114, POT120, POT124, POT125, POT126, POT127, POT128, POT129, POT130, POT131, POT198, POT201

5.2 Aquatic biota

Adopted PFAS screening values for groundwater and surface water are provided in **Table 8**.

Table 8 Summary of adopted screening criteria for aquatic biota

Human health (biota) receptors			
Media	**Chemical**	**Criteria**	**Comment / reference**
Crustaceans, 2 - 6 years (all species)	PFOS	0.065 milligrams per kilogram (mg/kg)	Department of Health (DoH) (2019) *Derivation: Children 2-6 years, median consumption* Occasionally consumed food. Trigger criteria for investigation for crustaceans apply to molluscs.
	PFOA	0.52 mg/kg	
	PFOS+PFHxS	0.065 mg/kg	
Finfish, 2 - 6 years (all species)	PFOS	0.0052 mg/kg	DoH (2019). *Derivation: Children 2-6 years, P90 consumption*
	PFOA	0.041 mg/kg	
	PFOS+PFHxS	0.0052 mg/kg	

Biota sampling has been identified by outcomes of ecological risk assessments and is conducted to indicate where biota may be exposed to PFAS intake above ecological toxicity values, to support future review of human exposure risk to ingestion of biota containing PFAS.

5.3 OMP triggers

Further to the adopted screening criteria, the OMP outlines site-specific triggers and recommended actions (if triggers are met) that results are to be reviewed against.

The 2024 sampling events (end of dry season, start of wet season) were undertaken in accordance with the 2021 OMP (Defence, 2021b) while the 2025 sampling event (end of wet season) was undertaken in accordance with the revised 2025 OMP (Defence, 2025a). Triggers have changed between the OMP versions, with both the 2021 and 2025 triggers detailed below in **Table 9** and **Table 10** respectively.

Herein, this report will assess all data against the revised 2025 OMP trigger points.

Table 9 Former OMP trigger points (Defence, 2021b)

Locations	Trigger point
Groundwater locations previously below laboratory LOR for PFAS	First time detection of PFAS compounds in groundwater.
All monitoring locations (groundwater, surface water or biota)	PFOS+PFHxS and/or sum of PFAS concentrations show an increasing trend (using statistical analysis) over two years of monitoring or increase by >30% in one year.
	PFOS+PFHxS and/or sum of PFAS concentrations show decreasing trend (using statistical analysis) over two years of monitoring or decrease by >30% in one year.
All groundwater monitoring locations	Groundwater monitoring well is not able to be sampled as it is dry, blocked, damaged, decommissioned, inaccessible, lost etc.

Locations	Trigger point
Groundwater private bores in Cossack and Emungalan	PFOS+PFHxS and/or sum of PFAS concentrations in a bore show an increasing trend (using statistical analysis) over two years of monitoring or increase by >30% in one year, or Concentrations are reported above the adopted drinking water health-based screening level.
Groundwater private bore on Uralla Road (POT111)	Concentrations of PFAS are reported in POT111 which indicate an increase in plume size or concentrations above drinking water criteria.
Groundwater private bore on Gorge Road (POT119)	Detectable concentrations of PFAS are reported in POT119.
MW734	PFOS+PFHxS and/or sum of PFAS concentrations at MW734 show an increasing trend (using statistical analysis (over two years of monitoring or increase by >30% in one year.

Table 10 Revised 2025 OMP trigger points - end of wet season (Defence, 2025a)

Locations	Trigger point
Groundwater locations previously below laboratory LOR for PFAS	First time detection of PFAS compounds in groundwater.
Groundwater locations within specific management zones	PFAS concentrations in groundwater that reported above the designated management zone criteria or an identified change in the risk profile resulting from the reported concentration.
Private bores in Cossack	New exceedance of PFAS compounds in groundwater above the adopted drinking water health-based screening level.
Private bore on Uralla Road (POT111)	Concentrations of PFAS are reported in POT111 which indicate an increase in plume size or concentrations above drinking water criteria.
Northwestern sentinel well located on Gorge Road east of Katherine River (MW815)	Detectable concentrations of PFAS are reported in MW815.
On-base location (MW133)	Concentrations of PFOS+PFHxS and/or Sum of PFAS concentrations show an increasing trend (using statistical analysis) over two years of monitoring.
Off-base location on public land (MW136)	Detectable concentrations of PFAS are reported in MW136.
All groundwater and surface water locations	Changing PFAS drinking water guideline values • Consider where analysis at a lower LOR may be required in locations where there is a complete or potential drinking water exposure pathway • Consider additional steps, such as water use surveys, further surface water and groundwater sampling to determine the defined extent of contamination with the lower LOR • Review all ambient groundwater and surface water sampling locations to advise where additional analysis of PFAS at a lower LOR may be required to understand ambient PFAS conditions.

6.0 Contextual and ancillary information

6.1 Remediation projects

6.1.1 Ongoing groundwater remediation activities

Two water treatment plants (WTPs) are in operation at the FTA and FSA, which are identified in the PMAP as primary source areas (refer to **Section 2.3**). The WTP at the FTA has been in operation since February 2019 and the FSA WTP has been in operation since May 2019. Contaminated groundwater from the Tindall Limestone Aquifer is extracted and transferred into the treatment system, where water is treated (via anion exchange filtration) and then re-injected back into the Tindall Limestone Aquifer or reused on base for operational purposes. An investigation into optimising the WTPs has been conducted, which identified targeting groundwater in the less permeable zone above the limestone aquifer (Defence, 2025c). A new well field is being installed at both the FTA and the FSA to extract groundwater from the lower permeable zone to be treated at the existing WTPs and reinjected into the underlying limestone aquifer after treatment.

Since commissioning in 2019, both WTPs have treated 3,510 Megalitres (ML) of extracted groundwater respectively (as of 28 May 2025). Additional aquifer testing and groundwater monitoring is continuing down-gradient of both WTPs to supplement the understanding of PFAS migration from the two primary source areas (FTA and FSA) and identify the impacts that treatment has had on the geometry and magnitude of the two groundwater plumes sourced from the FTA and FSA. This information will be documented separately, as evaluating WTP effectiveness is not part of this OMR, as the data collected through the OMP is insufficient to fully evaluate the effects the WTPs have upon PFAS mass-flux.

As part of ongoing PFAS management, Defence has provided alternative drinking water supplies to groundwater users impacted by PFAS contamination. This program has been in place since 2017 and continued through the monitoring period. This includes the recent commissioning of the long-term Katherine town WTP in May 2024, supplying up to 10ML/day of potable water to the community.

A base wide PFAS groundwater and surface water mass flux study is currently being undertaken separately to understand changes in conditions pre- and post-implementation of remedial actions. The information derived from this study will be used, along with other relevant PFAS data, to provide an accurate PFAS mass flux baseline to track changes in PFAS discharge from the base source areas to downgradient areas.

6.2 Soil remediation activities – key source areas

A Soil RAP (Coffey/Tetra Tech, 2022) was developed for the base to address PFAS contaminated soils at the two primary source areas (i.e. the FSA and FTA). Soil remediation works commenced at the FSA and FTA in 2022, with the FSA being completed in mid-2023 and works at the FTA completed in November 2024. Further information is provided below for the status and scope of soil remediation works completed.

6.2.1 FSA soil remediation

The works at the FSA remediation area comprised excavation of soils containing elevated concentrations of PFAS. Approximately 9,000 m^3 of PFAS impacted soils (out of approximately 10,000 m^3 excavated) were excavated and temporarily stockpiled on-base for characterisation sampling and treatment using a powdered activated carbon (PAC) amendment. The additional 1,000 m^3 of excavated soil was determined by testing to be below the required treatment PFOS+PFHxS concentration of 1 mg/kg and was segregated and included in the reinstated material. Treated and non-treated soils were backfilled into the excavation, compacted, and capped with compacted imported clay fill to reduce vertical infiltration of water and permeability. The reinstatement, compaction and capping of treated soils has been completed in late 2022. The site has been hydroseeded and long-term management of the site has been turned over to the base grounds management team.

Post remediation groundwater sampling has been conducted at the FSA between 2023 – 2025 during wet season conditions with the results reported separately, although it was anticipated that any observed changes in PFAS concentrations within groundwater resulting directly from soil remediation activities conducted at the FSA is unlikely in the short term (i.e. during the current monitoring period,

which is further discussed in **Section 8.0** below). Future OMP monitoring will continue to assess the impact that soil remedial works have had or will have on the spatial and temporal trends in PFAS concentrations in groundwater.

6.2.2 FTA soil remediation

Between 2022 – 2024, all FTA infrastructure (training pad and three concrete evaporation ponds) and approximately 23,300 m^3 of soils with elevated PFAS concentrations were excavated. A total of 1,000 m^3 had PFAS concentrations greater than 50 mg/kg and was transported off-base to a facility in Victoria for thermal destruction. Furthermore, approximately 50 m^3 of PFAS impacted sediments were removed from three evaporation basins, and approximately 70 m^3 of PFAS-impacted concrete material which were also transported interstate for thermal destruction.

A total of 1,100 m^3 of concrete from the previous FTA training pad and three evaporation basins has been crushed placed within the treatment excavation area.

An additional 11,000 m^3 of soil containing PFAS has been excavated, characterised, and treated using PAC. Treated soils were then backfilled into the excavation, compacted, capped and recontoured to reduce vertical infiltration, these works completed with the hydroseeding of the cap in November 2024.

It is estimated that 209 kilograms of PFOS+PFHxS was remediated through either stabilisation or offsite destruction, and an additional 56 kilograms of PFOS+PFHxS within evaporation pond sediments and concrete fines material were sent offsite for destruction, for an estimated total of 265 kilograms of PFOS+PFHxS from the FTA having been treated or destroyed. A conservative estimate of 72 kg PFOS+PFHxS mass remains at relatively low concentrations (average concentrations of 0.06 mg/kg) at the edges of the former FTA area outside of the remediation area. It is estimated that 75% of the PFOS+PFHxS mass at the FTA was remediated (AECOM, 2025e).

Post remediation groundwater sampling was conducted at the FTA between 2024 – 2025 during wet season conditions with the results to be reported separately. Minor changes in PFAS concentrations and compositions, within groundwater resulting from remediation activities at the FTA have been observed in the data collected during the reporting period (discussed further in **Section 8.4.4** below). It is anticipated that additional improvements are likely to be gradual and may take time to be reflected in monitoring data. Future monitoring will continue to track changes in PFAS concentrations occurring downgradient resulting from the remediation works completed at the FTA.

6.3 Related on- and off-base infrastructure projects

6.3.1 Off-base infrastructure projects

As part of Defence's ongoing PFAS management, Defence has provided alternative drinking water supplies to groundwater users impacted by PFAS contamination. This program has been in place since 2017 and continued through the monitoring period. This includes the recent commissioning of the long-term Katherine town WTP in May 2024, supplying up to 10ML/day of potable water to the community.

6.3.2 On-base infrastructure projects

Current on-base infrastructure projects where PFAS impacted soils may have been or will be excavated and managed and therefore have the inadvertent potential to reduce the mobilisation of PFAS across the broader base include, but are not limited to, the following:

- P200 Jet Fuel Storage Tanks:
  - Construction and covering of bulk fuel storage tanks.
- P500 Bomber Apron:
  - Construction of a parking apron for aircraft.
- P400 Aircraft Maintenance Support Facility:
  - Construction of a storage facility for aircraft ground support.

- P700 Squadron Operations Facility:
  - Construction of a planning, administrations and communications facility for deployed United States Air Force crews and support staff.
- EST00346 Tindal Redevelopment Stage 6:
  - Base-wide electrical infrastructure upgrades, new water main installed to create a ring main in the water infrastructure network and replacement of valves in the combined potable/fire-fighting hydraulic system, storm water system upgrades, construction of new permanent Living in Accommodations, Camp 3 Fighter OPTECH facilities replacement, Military Working Dog Kennels refurbishment and Northern Regional Operations Centre upgrades/replacement.
- EST00347 Airfield Works and Associated Infrastructure:
  - Runway and taxiway upgrades (extension, widening and strengthening) including Aeronautical Ground Lighting, new aircraft parking apron, new aviation fuel farm, Air Movements Terminal, upgrades to the supporting site infrastructure and AIR6000 NACC Integrated Power Pack works. It is noted that significant earthworks have been conducted between the FSA and the runway to the southeast. These earthworks may have contributed to the release of PFAS in shallow soils and contributed to PFAS concentrations observed in surface water collected during the 2024 – 2025 wet season period.
- EST08452 Fire Station Refurbishment:
  - Construction of new separate accommodation facility comprising of eight (8) sleeping quarters and a female change / locker room. Includes construction of 50 m of new covered external walkway.
  - Replacement of roof, wall cladding and vapour barrier to air-conditioned area of building including, but not limited to replacement of roof sheeting, vapour barrier, insulation, wall cladding and insulation, flashings and gutters.
- EST08507 Perimeter Fencing:
  - Installation of airside fencing.
- AIR7001:
  - Construction of facilities next to civilian terminal including hangars, support buildings, car park area, and aircraft aprons and taxiways.

On-base infrastructure projects listed above all include movement of soils and / or changes in existing infrastructure. All works completed on-base are required to conduct works in accordance with the Defence PFAS Construction and Maintenance Framework (Defence, 2021c), and therefore impacts from infrastructure projects are not anticipated, although any movement of PFAS impacted soil may have temporary impacts to localised surface water and / or groundwater. Significant earthworks as occurred between the FSA and the runway area that may have loosened soils and exposed PFAS sorbed to shallow soils in the area to erosional forces, potentially releasing PFAS into the localised drainage system at a faster rate than soils that are undisturbed and naturally bound. Increased PFAS concentrations were observed in surface water samples collected during the 2025 late wet season sampling event compared to previous sampling events, with 2021 being the last time comparable concentrations were recorded. Further discussion can be found in **Section 8.5.3** and **Section 9.0**.

6.4 Climate

Climatic data for the region was extracted from the Tindal Airport Bureau of Meteorology (BOM) weather station (014932), located immediately adjacent to the base (BOM, 2025). The twelve-month monitoring period was characterised by hot and dry winters between June to October 2024 and May to July 2025, and hot, humid wet summers between October 2024 to May 2025.

Total rainfall for 2024 was 1188.8 mm, and 701.4 mm between January 2025 to 8 May 2025 (BOM, 2025). The rainfall occurring during the reporting period was 1128 mm over 12 months, which is similar to the mean annual rainfall, although total rainfall for the 2023-2024 wet season was above the long-

term average. **Figure 1** (below) shows the mean monthly rainfall for the last six years between 2018 to 2025 (May).

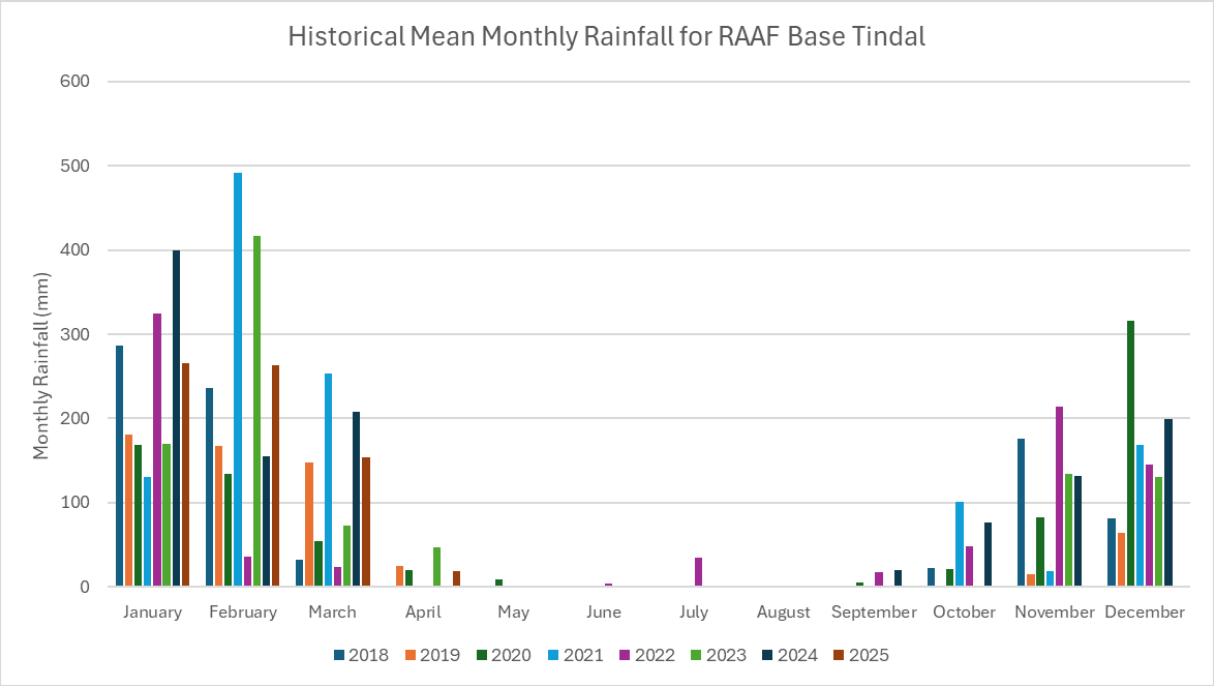

Figure 1 Mean monthly rainfall for RAAF Base Tindal (Station 014932, up to 8 May 2025) (BOM, 2025).

Monitoring during the past 12 months also included obtaining or measuring water levels within the Katherine River. Measured water levels at the Railway Bridge (Station G8140001) reached a maximum level of 8.198 m (20 February 2025) and a minimum of 0.242 m (22 August and 30 September 2024) (DEPWS, 2024). River levels for 2024 to 2025 are shown in **Figure 2** (below).

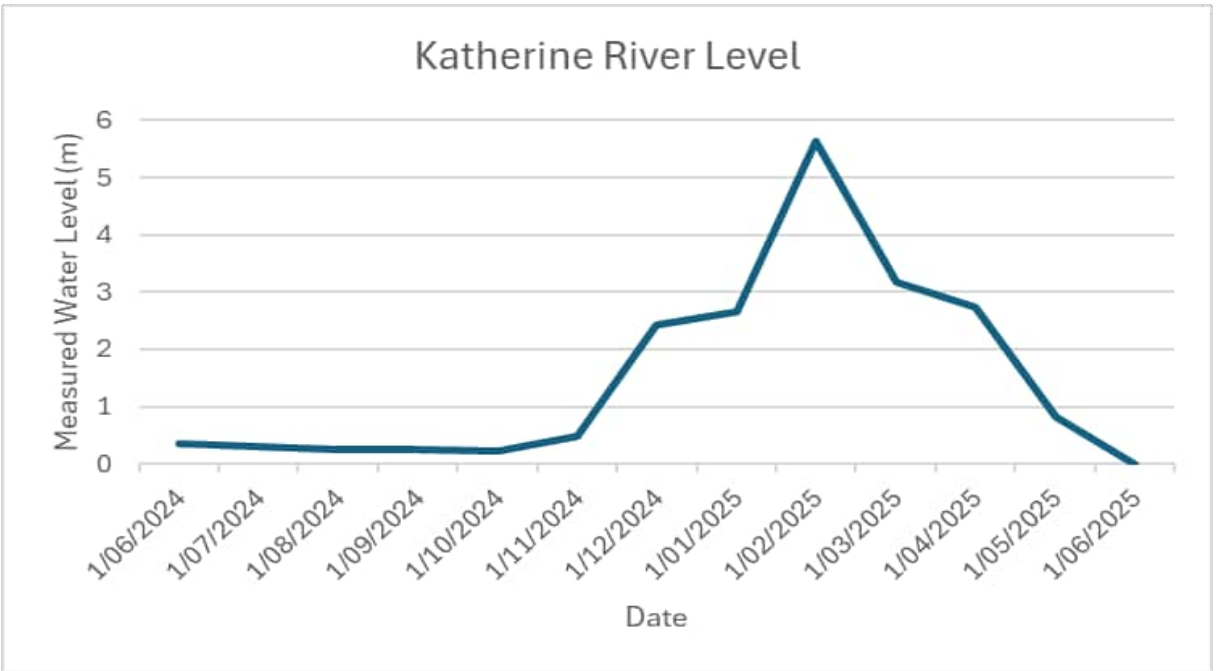

Figure 2 Measured Katherine River Level (m) June to 1 May 2025 (Katherine River Railway Bridge – G8140001)

Regionally, the relationship between climatic / rainfall conditions and PFAS concentrations is complex, with below average rainfall potentially increasing PFAS concentrations in Katherine River water, due to limited recharge and decreased dilution (Coffey, 2018a). Conversely, above average rainfall is likely to

increase both groundwater recharge and groundwater levels in the Tindall Limestone Aquifer, causing an increased mobilisation of PFAS into groundwater from source areas. Outside of source areas, in areas where rainfall can penetrate to the groundwater aquifer, above average rainfall could serve to dilute concentrations of PFAS in groundwater as clean water enters the system.

Monthly maximum mean temperatures were reported at the level or below the long-term average for the majority of the 2024-2025 monitoring period (refer to **Figure 3**).

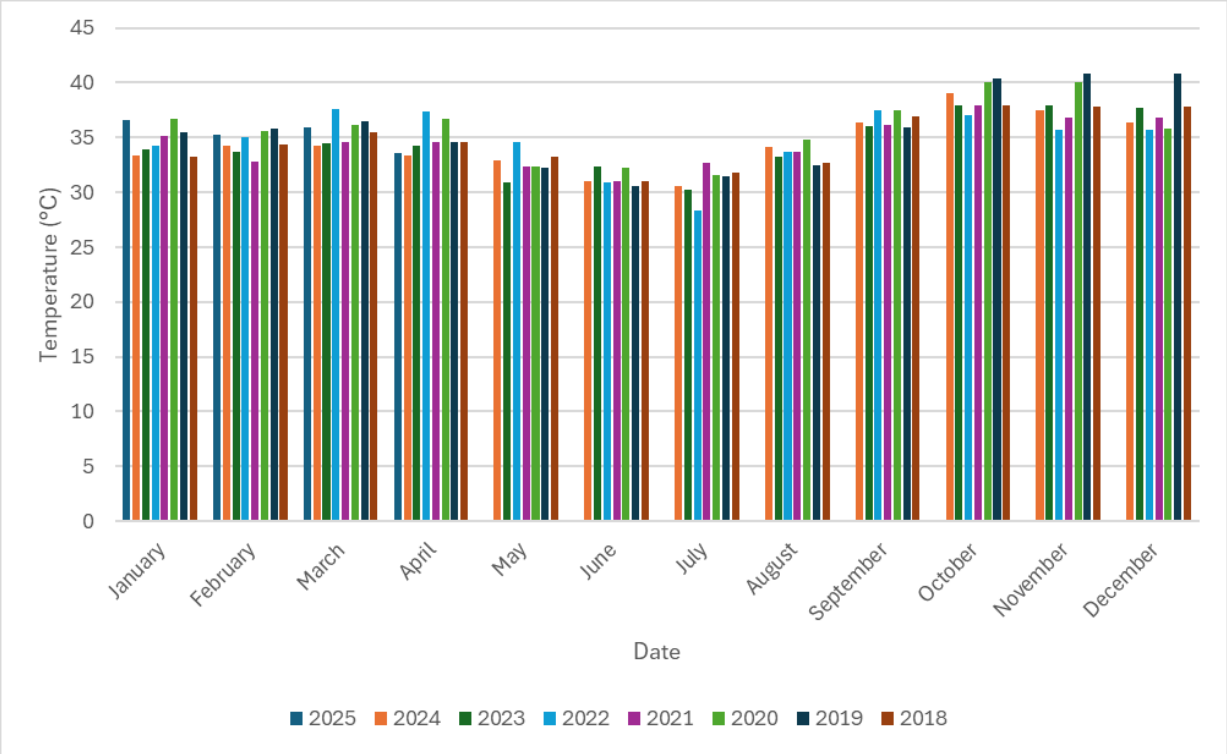

Figure 3 Measured average maximum temperature for Katherine 2018-2025 (RAAF Base Tindal, Station 014932)

The combined climatic conditions are likely to result in changes to the hydrogeological system and manifest in outcomes relevant to the monitoring of PFAS in the Katherine region. Changes may include groundwater gradients, groundwater flow directions, and PFAS concentrations / mass flux in groundwater, creek and river systems. **Figures F6.1** and **F6.2** in **Appendix A** presents groundwater flow directions for the monitoring period during the June 2024 and May 2025 groundwater monitoring events. These results are discussed further in **Section 8.1** below. Seasonal changes in precipitation appear to affect PFAS concentrations in Katherine River with higher concentrations observed during the dry season when there is less dilution and a higher percentage of river recharge occurring from springs fed by the Tindall Limestone Aquifer. Lower concentrations are observed over the wet season when there is a higher percentage of river recharge occurring from surface water runoff throughout the greater Katherine watershed (i.e. greater dilution). No other climate influenced predictable patterns have emerged from data collected to date.

7.0 Monitoring data summary

7.1 Groundwater

7.1.1 Summary of groundwater data presentation sources

Groundwater data are graphically represented in **Appendix A** on the following figures:

- **Figure F1**: location of the groundwater management area, and concentration-based management areas, alongside key surface water features
- **Figures F2 – F3**: on- and off-base groundwater monitoring locations
- **Figures F6.1 – F6.2:** interpreted groundwater flow direction and elevation contours for October 2024 and April-May 2025 respectively
- **Figures F7.1, F7.3, F7.5, F7.7, F7.9. F7.11. F7.13, F7.15, F7.17**: concentrations of PFOS+PFHxS for on-base and off-base groundwater locations
- **Figures F7.2, F7.4, F7.6, F7.8, F7.10, F7.12, F7.14, F7.16, F7.18**: concentrations of PFOA for on-base and off-base groundwater locations.

With adoption of the new drinking water guideline values (NHMRC, 2025), PFBS concentrations have been reviewed and detections listed in **Section 7.1.4**, however, figures have not been developed for PFBS at this time, with focus remaining primarily on PFOA and PFOS+PFHxS concentrations and trends.

The gauging and water quality parameter results obtained during the groundwater sampling work from the current monitoring period are provided in **Table T1a** and **Table 1b** respectively, in **Appendix C.** Historic groundwater analytical results for the groundwater Management Area have been provided as **Table T2** in **Appendix C**. These results are discussed in the following subsections.

7.1.2 Groundwater field parameters

During each sampling event, groundwater quality physiochemical field measurements were recorded ex-situ, after collecting groundwater samples. Parameters are presented in each of the respective factual sampling event reports in **Appendix B**, and tabulated in **Table T1b** (**Appendix C**).

The maximum and minimum recorded field parameters for the monitoring period are provided below in **Table 11**. Note that the maximum and minimum recorded field parameters for the period preceding the monitoring period have also been included in the table for comparison purposes.

From this comparison, overall, the groundwater quality field measurements for the monitoring period readings are consistent with historical data.

Table 11 Groundwater quality parameter ranges

Event	No. of samples	DO (mg/L)	EC (µS/cm)	pH	Corrected redox (mV)	Temperature (°C)
May 2017 - May 2025 (Historical)	780	0.02 (MW146) – 9.68 (MW110) *Poor to oxygenated conditions*	3 (POT114 and POT119) - 8,428 (POT130 *Freshwater to brackish conditions*	4.67 (MW244) – 10.98 (MW127) *Acidic to alkaline conditions*	24.9 (POT120 – 1,143.8 (MW231) *Oxidising conditions*	17.7 (POT120) – 48.7 (POT127)
July 2024 - October 2024 (Dry season)	58	0.53 (MW136) – 5.57 (OTH120) *Poor to oxygenated Conditions*	226 (MW231) – 1,577 (MW802S) *Freshwater to brackish conditions*	5.08 (OTH114) – 7.76 (POT125) *Acidic to mildly alkaline conditions*	162.6 (MW244) – 385.1 (MW285) *Oxidising conditions*	29.7 (POT124) – 48.7 (POT127)
November 2024 - January 2025 (Start of wet season)	55	0.35 (OTH117) – 7.02 (POT125) *Poor to oxygenated Conditions*	89 (POT113) – 957 (OTH119) *Freshwater to brackish conditions*	5.24 (MW140) – 7.86 (POT129) *Acidic to mildly alkaline conditions*	242.3 (POT125) - 347.2 (MW140) *Oxidising conditions*	27.1 (POT120) – 44.1 (OTH117)
February 2025 - May 2025 (End of wet season)	100	0.32 (MW146) – 8.81 (POT127) *Poor to oxygenated Conditions*	78 (MW137) – 1,346 (MW803I) *Freshwater to brackish conditions*	5.98 (OTH119) – 8.90 (MW285) *Acidic to alkaline conditions*	32.8 (MW109S) - 430.4 (POT112) *Oxidising conditions*	25.4 (POT121) - 41.8 (POT131)

Note: DO = dissolved oxygen; EC = electrical conductivity, values for water parameters presented as (min – max)
Corrected redox means a temperature-based adjustment has been made to the field measurement of oxidation-reduction potential (ORP) to convert it to the standard hydrogen electrode (SHE) standard. A water with a positive corrected redox is considered to be an oxidising agent, a water with a negative corrected redox is considered to be a reducing agent.

7.1.3 Groundwater elevations

The standing water levels (SWL) were measured in the selected monitoring wells during the biannual monitoring events to evaluate the groundwater elevations (m AHD) at on- and off-base locations. Groundwater gauging measurements were only collected during the annual and biannual monitoring events as samples collected during the monthly in wet season and the once in dry season are collected from extraction bores where gauging is not feasible. The groundwater elevation ranges measured during the biannual monitoring events are summarised in **Table 12** below with gauging data presented in **Table T1** (**Appendix C**).

Table 12 Summary of groundwater elevations

Monitoring event	No. wells gauged*	Min GWE (m AHD)	Max. GWE (m AHD)
End of dry season (October - December 2024)	37	91.9 (MW144)	131.47 (MW244)
End of wet season (April 2025)	38	89.1 (MW814)	133.5 (OTH111)

Note: GWE = groundwater elevation. * Number of wells gauged may not equal number of groundwater wells shown in GWE figures due to reference elevation not available to convert metres below top of casing (mbTOC) to m AHD.

Inferred groundwater flow direction at the base is presented on **Figure F6.1** and **Figure F6.2** (**Appendix A**) which was based on the calculated groundwater elevations measured during the 2024 end of dry season and 2025 end of wet season events. The data obtained from the monitoring period indicated that groundwater flow within the Management Area flows west towards Katherine River. This is consistent with historical gauging events.

Rainfall data for this period is summarised above in **Figure 1** (**Section 6.3**). Groundwater elevations are presented in **Table T1** in **Appendix C**. Base-wide groundwater elevation data collected for presentation of potentiometric contours was collected during a separate gauging event documented in Dry Season SER 2024 (AECOM, 2025b) in **Appendix B**.

In summary, the base and Katherine Township are situated above the unconfined Tindall Limestone Aquifer, where groundwater levels fluctuate seasonally by rising or falling in response to wet and dry season conditions and is indicative of a highly transmissible aquifer. The cavernous nature of the Tindall Limestone Aquifer provides significant preferential flow pathways that are conduits for rainfall infiltration. Groundwater discharge also takes place through seepage into fluvial systems via fractures throughout the formation at depths of the surface water drainage (e.g. Katherine River Hot Springs). Groundwater expression areas have also been observed in Tindal Creek on base, where PFAS impacted groundwater expresses intermittently into surface water that flows directly into Tindal Creek. It is possible that as the dry season is established, this flow ceases / pools downgradient within the Creek and then vertically infiltrates towards the aquifer.

The flow directions provided in this OMR are consistent with those measured in the Detailed Site Investigation (DSI) (Coffey, 2018a).

The Tindall Limestone Aquifer provides persistent baseflow to the Katherine River. Based on groundwater modelling performed by NT Department of Environment and Natural Resources groundwater particles found in the Katherine River take between 3 months and 50 or more years to reach the river (Schult, 2016).

Seasonal fluctuations in groundwater levels within the Tindall Limestone Aquifer have been observed, suggesting aquifer recharge can be rapid. Based on the localised rainfall patterns that occur in the monitored area, the magnitude of the hydraulic gradient may vary spatially during the wet season. The understanding of the duration and spatial extent of hydraulic gradient fluctuations could be improved by collecting time-series groundwater level data using dataloggers, during the wet season particularly at key locations which are not accessible during wet periods.

7.1.4 Groundwater PFAS analytical results

All groundwater analytical results for each monitoring event are presented in **Table T2** (**Appendix C**) along with historical analytical results. Results are presented visually in **Figures F7.1 – F7.18** (**Appendix A**).

A summary of the groundwater monitoring analytical results for both on- and off-base locations for PFOS, PFOA and PFOS+PFHxS are summarised in **Table 13**. First-time detections of PFOS, PFOA and / or PFOS+PFHxS are summarised in **Table 14**. Results outside of the expected management zone area concentration range are summarised in **Table 15**, **Table 16** and **Table 17**. New maximum and new minimum concentrations are summarised in **Table 18** and **Table 19** respectively.

Interpretation of results is provided in **Section 8.0**.

Table 13 Summary of PFOA, PFOS, and sum of PFOS+PFHxS concentrations in primary groundwater samples (October 2024 - May 2025)

Monitoring event	No. of sample locations analysed	Compound	Concentration range for reporting period (>LOR) (µg/L)	No. of sample locations with concentrations >LOR	No. of samples exceeding drinking water criteria (HEPA, 2025)	No. of samples exceeding recreational water criteria (HEPA, 2025)	No of samples exceeding freshwater 99% species protection criteria (HEPA, 2025) **
Dry Season (October – December 2024*)	62 (On-base and Off-base)	PFOA	<0.01 - 108 (MW231)	27	11	4	4
		PFOS+PFHxS	<0.01 - 8,170 (MW803D)	43	N/A	N/A	N/A
		PFOS	<0.01 - 8,020 (MW803D)	43	43	16	43
		PFBS	<0.02 - 116 (MW231)	27	9	N/A	N/A
Start of Wet Season (November '24 - January '25)	54 (Off-base)	PFOA	<0.0002 - 0.005 (OTH119)	3	0	0	0
		PFOS+PFHxS	<0.002 - 0.18 (POT113)	31	N/A	N/A	N/A
		PFOS	<0.002 - 0.08 (POT113)	27	21	0	27
		PFBS	<0.002 - 0.005 (OTH119)	5	0	N/A	N/A
End of Wet Season (February to May 2025)	99 (On-base and off-base)	PFOA	<0.002 - 76.7 (MW129)	32	11	5	3
		PFOS+PFHxS	<0.002 - 1,430 (MW803D)	66	N/A	N/A	N/A
		PFOS	<0.002 - 1,230 (MW803D)	65	61	15	65
		PFBS	<0.002 - 56.5 (MW231)	31	10	N/A	N/A

* = Some dry season locations were collected in November or December as mentioned in Section 3.4.

** = only samples detected above LOR
N/A – Criteria not applicable

First-time detections of PFOA, PFOS and PFOS+PFHxS reported during the monitoring period are presented in **Table 14** below.

Table 14 Groundwater analytical results - first-time detections of PFOA, PFOS and PFOS+PFHxS

Monitoring event	Area	Location	Details
Dry season	Nil	-	-
Start of wet season	Private bore properties in the Cossack area	POT125	PFOS+PFHxS (0.006 µg/L)
		POT126	PFOS+PFHxS (0.003 µg/L)
		POT127	PFOS+PFHxS (0.003 µg/L)
		POT130	PFOS+PFHxS (0.004 µg/L)
		POT131	PFOS+PFHxS (0.006 µg/L)
		POT198	PFOS+PFHxS (0.003 µg/L)
		POT201	PFOS+PFHxS (0.002 µg/L)
		The above listed seven private property samples from January 2025 all reported a first-time detection of PFOS+PFHxS concentrations. Previous analysis utilised the standard LOR (0.01 µg/L), whereas low-level has been conducted in 2025 to detect PFAS compounds at lower concentrations (LOR is 0.002 µg/L). Low-level analysis was selected for specific wells, as discussed in **Section 5.1.1** and listed within **Table 7**.	
End of wet season	Arndt Rd	MW814	PFOS (0.04 µg/L) PFOS+PFHxS (0.06 µg/L)
	Gorge Rd	MW815	PFOA (0.003 µg/L) PFOS (0.102 µg/L) PFOS+PFHxS (0.187 µg/L)

PFAS concentrations above the designated zone management area concentration ranges reported during the monitoring period are presented in **Table 15** to **Table 17** below.

Table 15 Groundwater analytical results - Dry season 2024 - Reported concentration above an expected zone area

Assigned Zone	Private Property Event October 2024	Annual Event October 2024
1 – Groundwater > Recreation Water Criterion (2 µg/L)	Nil	MW400 (2.21 µg/L)
2 – Groundwater > Drinking Water Criterion (0.07 µg/L)	Nil	Nil
5 – Groundwater < Criterion (<0.07 µg/L)	POT112 (0.18 µg/L)	Nil

Table 16 Groundwater analytical results - Start of wet season 2024-2025 - Reported concentrations above an expected zone area

Assigned Zone	Private Property Event November 2024	Private Property Event December 2024	Private Property Event January 2025
1 – Groundwater > Recreation Water Criterion (2 µg/L)	Nil	Nil	Nil
2 – Groundwater > Drinking Water Criterion (0.07 µg/L)	Nil	Nil	Nil
5 – Groundwater < Criterion (<0.07 µg/L)	POT112 (0.09 µg/L) POT113 (0.13 µg/L)	POT112 (0.10 µg/L) POT113 (0.09 µg/L)	POT113 (0.18 µg/L)

Table 17 Groundwater analytical results - End of wet season 2025 - Reported concentrations above an expected zone area

Assigned Zone	Private Property Event February 2025	Private Property Event March 2025	Private Property Event April 2025	Biannual Event April/May 2025
1 – Groundwater > Recreation Water Criterion (2 µg/L)	Nil	Nil	Nil	Nil
2 – Groundwater > Drinking Water Criterion (0.07 µg/L)	Nil	Nil	Nil	Nil
5 – Groundwater < Criterion (<0.07 µg/L)	OTH117 (0.113 µg/L) POT113 (0.498 µg/L)	POT113 (0.380 µg/L)	POT113 (1.630 µg/L)	MW815 (0.187 µg/L)

During the monitoring period, the following new location-specific maximum concentrations per seasonal sampling event of PFOS, PFOS+PFHxS, PFOA and PFBS were reported and are summarised in **Table 18** below.

Table 18 Groundwater results - new maximum concentrations of PFOA, PFOS and PFOS+PFHxS

Monitoring event	Area	Location	Analyte	Previous maximum (µg/L)	New maximum (µg/L)
Dry season (October-December 2024)	Base Boundary	MW118	PFOS	1.72	1.87
	Research Farm	MW134	PFOS	1.3	1.45
			PFOS+PFHxS	2.0	3.00
	Research Farm	MW135	PFOS	0.10	0.12
	Gorge Rd	MW136	PFOS	0.01	0.05
			PFOS+PFHxS	0.01	0.05
	FSA	MW801S	PFOS	0.28	0.39
			PFOS+PFHxS	0.45	0.54
	FTA	MW803D	PFOS	2,190	8,020
			PFOS+PFHxS	2,520	8,170
Start of wet season (November 2024 - January 2025)	FTA	MW803D	PFOA	44.0	50.4
	Zimin Dr	OTH119*	PFBS	<0.02	0.005
		POT128*	PFOS	0.02	0.028
			PFOS+PFHxS	0.03	0.044
			PFBS	<0.02	0.003
		POT129	PFOS	0.03	0.038
			PFOS+PFHxS	0.04	0.061
End of wet season (February - May 2025)	MEOMS	MW244	PFOA	0.76	0.81
	Gorge Rd	MW815 (POT119 replacement)	PFOS	N/A	0.102
			PFOS+PFHxS		0.187
			PFOA		0.003
			PFBS		0.015
	Married Quarters	OTH111	PFOS	0.02	0.049
			PFOS+PFHxS	0.02	0.054
	Zimin Dr	POT113	PFOS	0.88	0.97
			PFOS+PFHxS	1.55	1.63
	Shadforth Rd	POT120*	PFBS	<0.02	0.003
		POT124	PFOS	0.03	0.033

N/A = Not applicable, first time sampling.

*Indicates when location was analysed for low-level analysis, and new minimum is reflective of a reduced laboratory LOR.

The following new location-specific minimum concentrations per seasonal monitoring event of PFOS, PFOS+PFHxS and / or PFOA were reported and are presented in **Table 19**.

Table 19 Groundwater results - new minimum concentrations of PFOA, PFOS and PFOS+PFHxS

Monitoring event	Area	Location	Analyte	Previous Minimum (µg/L)	New Minimum (µg/L)
Dry season (August - October 2024)	Central Transect	MW111S	PFOS	2.04	1.85
		MW11D	PFOA	0.10	0.09
			PFOS	2.82	2.60
			PFOS+PFHxS	3.66	3.65
	Base Boundary	MW118D	PFOA	0.06	0.05
		MW118I	PFOS	1.86	1.62
			PFOS+PFHxS	2.49	2.44
	FSA	MW802D	PFOS	3.78	2.87
			PFOS+PFHxS	6.45	6.27
		MW802I	PFOA	3.20	3.04
			PFOS	78.3	57.4
			PFOS+PFHxS	104	76.5
	FTA	MW803I	PFOS	57.0	40.8
			PFOS+PFHxS	112	78.7
Start of wet season (November 2024 - January 2025)	Zimin Dr	OTH119*	PFOA	<0.01	0.002
			PFOS	<0.01	0.006
			PFOS+PFHxS	<0.01	0.006
		POT124*	PFOA	<0.01	<0.002
		POT125*	PFOA	<0.01	<0.002
			PFOS	<0.01	<0.002
			PFOS+PFHxS	<0.01	<0.002
		POT126*	PFOA	<0.01	<0.002
			PFOS	<0.01	<0.002
			PFOS+PFHxS	<0.01	<0.002
		POT127*	PFOA	<0.01	<0.002
			PFOS	<0.01	<0.002
			PFOS+PFHxS	<0.01	<0.002
		POT128*	PFOA	<0.01	<0.002
			PFOS	<0.01	<0.002
			PFOS+PFHxS	<0.01	<0.002
		POT129*	PFOA	<0.01	<0.002
	Shadforth Rd	POT130*	PFOA	<0.01	<0.002
			PFOS	<0.01	<0.002
			PFOS+PFHxS	<0.01	<0.002
	Zimin Dr	POT131*	PFOA	<0.01	<0.002
			PFOS	<0.01	<0.002
			PFOS+PFHxS	<0.01	<0.002

Monitoring event	Area	Location	Analyte	Previous Minimum (µg/L)	New Minimum (µg/L)
	Tokmakoff Rd	POT198*	PFOA	<0.01	<0.002
			PFOS	<0.01	<0.002
			PFOS+PFHxS	<0.01	<0.002
		POT201*	PFOA	<0.01	<0.002
			PFOS	<0.01	<0.002
			PFOS+PFHxS	<0.01	<0.002
End of wet season (February - May 2025)	Central Transect	MW111S	PFOA	0.07	0.06
			PFOS	1.85	1.73
			PFOS+PFHxS	2.86	2.64
	Base Boundary	MW118I	PFOA	0.06	0.05
			PFOS	1.62	1.37
			PFOS+PFHxS	2.44	2.03
		MW130	PFOS	0.02	0.01
			PFOS+PFHxS	0.04	0.03
	Katherine East	MW138	PFOA	0.02	0.01
	Collins Rd	MW400	PFOS	1.18	0.75
			PFOS+PFHxS	1.76	1.23
	Central Transect	MW801S	PFOA	0.01	<0.01
	FSA	MW802D	PFOA	0.21	0.14
			PFOS	2.87	2.78
			PFOS+PFHxS	6.27	4.69
		MW802S	PFOS	2.03	1.61
	FTA	MW803D	PFOA	28.8	28.2
			PFOS	1,130	879
			PFOS+PFHxS	1,320	1,080
		MW803S	PFOA	43.4	9.33
			PFOS	157	78.9
			PFOS+PFHxS	351	122
	Married Quarters	OTH111*	PFOA	<0.01	<0.002
	Morris Rd PWC bore	OTH115	PFOS+PFHxS	0.21	0.18
	Uralla Rd	POT111*	PFOA	<0.01	<0.002
			PFOS	<0.01	<0.002
			PFOS+PFHxS	<0.01	<0.002
	Shadforth Rd	POT114*	PFOA	<0.01	<0.002
			PFOS	<0.01	<0.008

*Indicates when location was analysed for low-level analysis, and new minimum is reflective of a reduced laboratory LOR.

7.2 Surface water

7.2.1 Overview

Surface water data graphically represented in **Appendix A** on the following figures:

- **Figure F1**: location of key surface water features, PFAS sources and pathways
- **Figure F4**: location of on- and off-base surface water monitoring locations
- **Figure F8.1, F8.3, F8.5 and F8.7**: concentrations of PFOS+PFHxS for on-base and off-base surface water locations
- **Figure F8.2, F8.4, F8.6 and F8.8**: concentrations of PFOA for on-base and off-base surface water locations.

Surface water features within the PFAS Management Area consist of the RAAF Base Tindal runway drainage lines, Tindal Creek, Katherine River and the Katherine Hot Springs. In addition, the water within the Katherine Town Council Community Swimming Pool is categorised as a surface water feature (although not a natural water feature). All surface water (excluding the swimming pool) in the subject drains flow towards and eventually discharge into the Katherine River. There are also locations where surface water interacts with groundwater through springs, and where surface water infiltrates into groundwater via sink holes within the Tindall Limestone formation.

Surface water sampling was conducted on-and off-base during the monitoring period as presented in **Table 20.**

Table 20 Surface water sampling schedule June 2024 - April 2025

Monitoring event	Locations
June 2024 - October 2024 (Dry season)	Katherine River, Katherine Hot Springs and Katherine Town Council Swimming Pool
November 2024 - January 2025 (Start of wet season)	On-base, Katherine River, Katherine Hot Springs, Tindal Creek and Katherine Town Council Swimming Pool
February 2025 - April 2025 (End of wet season)	On-base, Tindal Creek, Katherine River, Katherine Hot Springs and Katherine Town Council Swimming Pool

7.2.2 Surface water field parameters

Measurements of surface water quality parameters were recorded at the time of collecting samples. The recorded water quality parameters are presented in each of the respective factual reports in **Appendix B** and results are provided in full as **Table T3** (**Appendix C**).

The readings for the monitoring period are also summarised in **Table 21**. These results are considered consistent with previous investigations.

From observations at the two surface water locations which were monitored quarterly (SW108 and SW153), it is noted that surface water conditions varied greatly based on the timing of the monitoring event. Average dissolved oxygen (DO), electrical conductivity (EC), pH, temperature and reduction / oxidation (redox) have been recorded on a quarterly basis for these two locations and are presented in **Table 21**.

Table 21 Surface water quality parameters ranges

Event	No. of samples	DO (mg/L)	EC (µS/cm)	pH	Corrected redox potential (mV)	Temperature (°C)
October 2019 – April 2025 (Historical)	134	0.53 (SW153) – 7.54 (SW108) *Poor to well oxygenated conditions*	25.20 (SW110) - 2,843 (SW108) *Freshwater to brackish conditions*	5.13 (SW153) – 8.12 (SW016) *Acidic to alkaline conditions*	157.6 (SW161) – 662.2 (SW108) *Oxidising conditions*	21.2 (SW100) – 35.8 (SW049)
June 2024 - October 2024 (Dry season)	6	2.91 (SW153) – 7.18 (SW100) *Oxygenated conditions*	161.2 (SW110) - 825 (SW153) *Freshwater conditions*	5.13 (SW153) - 7.13 (SW108) *Acidic to neutral conditions*	191.90 (SW108) – 353.4 (SW153) *Oxidising conditions*	28.3 (SW108) – 33.8 (SW108)
November 2024 - January 2025 (Start of wet season)	6	0.68 (SW016) – 7.54 (SW108) *Poor to well oxygenated conditions*	79.3 (SW161) – 809.0 (SW153) *Freshwater conditions*	5.34 (SW161) – 8.17 (SW153) *Mildly acidic to mildly alkaline conditions*	168.7 (SW350) – 313.5 (SW153) *Oxidising conditions*	27.7 (SW016) – 34.6 (SW350)
February 2025 - April 2025 (End of wet season)	11	1.23 (SW049) – 4.34 (SW161) *Poor to oxygenated conditions*	40.7 (SW161) - 852 (SW021) *Freshwater conditions*	7.15 (SW108) - 8.51 (SW021) *Neutral to alkaline conditions*	251.1 (SW021) - 319.1 (SW100) *Oxidising conditions*	27.6 (SW049) - 32.1 (SW110)

Water quality parameters presented above have excluded OTH008 (Katherine Swimming Pool) measurements as they are not reflective of natural surface water conditions.
Note: DO = dissolved oxygen; EC = electrical conductivity, values for water parameters presented as (min – max)

7.2.3 Surface water PFAS analytical results

All surface water analytical results for all monitoring events are presented in **Table T4 (Appendix C**). Analytical results for PFOS+PFHxS are presented in **F8.1, F8.3, F8.5 and F8.7** (**Appendix A**) and PFOS concentrations in **F8.2, F8.4, F8.6 and F8.8** (**Appendix A**)

Surface water results for all sampling events within the monitoring period are summarised in **Table 22**. No new maximum PFAS concentrations were reported. No new minimum PFAS concentrations were recorded over the monitoring period. Interpretation of results is provided in **Section 8.5**.

Table 22 Summary of PFOS, PFOA and PFOS+PFHxS concentrations in primary surface water samples

Monitoring event	No. of sample locations analysed	Compound	Concentration range for reporting period (>LOR) (µg/L)	No. of sample locations with concentrations >LOR	No. of samples exceeding drinking water criteria (HEPA, 2025)	No. of samples exceeding recreational water criteria (HEPA, 2025)	No of samples exceeding freshwater 99% species protection criteria (HEPA, 2025) **
June 2024 - October 2024 (Dry season)	7	PFOS	<0.01 to 0.16 (SW100)	6	3	0	6
		PFOA	<0.01 (All locations)	0	0	0	0
		PFOS+PFHxS	<0.01 - 0.27 (SW100)	6	3	0	N/A
November 2024 - January 2025 (Start of wet season)	9	PFOS	<0.01 – 1.37 (SW140)	7	5	0	7
		PFOA	<0.01 - 0.43 (SW140)	1	0	0	0
		PFOS+PFHxS	0.01- 1.74 (SW140)	8	6	0	N/A
March 2025 - April 2025 (End of wet season)	11	PFOS	<0.01 – 15.0 (SW049)	7	5	1	7
		PFOA	<0.01 - 0.75 (SW049)	4	1	0	0
		PFOS+PFHxS	<0.01 – 20.2 (SW049)	7	5	1	N/A

N/A – Criteria not applicable

There were no first-time detections or new exceedances of the adopted assessment criteria reported in surface water during the current two-year monitoring period. Additionally, there were no locations with new specific maximum concentrations of PFOS, PFOS+PFHxS and / or PFOA.

During the current twelve-month monitoring period the following new location specific minimum concentrations per seasonal monitoring event of PFOS, PFOS+PFHxS and / or PFOA were reported and are presented in **Table 23**.

Table 23 Surface water results - new minimum concentrations of PFOA, PFOS and PFOS+PFHxS

Monitoring event	Area	Location	Analyte	Previous minimum	New minimum
June 2024 - October 2024 (Dry season)	N/A	Nil	Nil	Nil	Nil
November 2024 - January 2025 (Start of wet season)	N/A	Nil	Nil	Nil	Nil
February 2024 - April 2025 (End of wet season)	On-base	SW140	PFOA	0.13	0.04
			PFOS	1.14	0.80
			PFOS+PFHxS	1.39	0.99

N/A – not applicable

7.3 Aquatic biota

7.3.1 Overview

Aquatic biota monitoring within Katherine River is conducted annually at the end of the dry season (September/October). Aquatic biota is monitored to track changes in PFAS concentrations in fish and crustaceans within Katherine River over time and to inform the Northern Territory Department of Health (NT Health) for keep their health advisory up to date. Aquatic biota samples are collected by NT Fisheries staff utilising NT Fisheries equipment.

7.3.2 Aquatic biota analytic results

Available aquatic biota analytical results are presented in **Table T5** (**Appendix C**) and monitoring locations are presented in **Figure F5** (**Appendix A**). Summary of PFOS, PFOS+PFHxS and PFOA analytical results for the monitoring period are presented in **Table 24**. Interpretation of results is provided in **Section 8.6**.

Table 24 Summary of PFOS, PFOA and PFOS+PFHxS biota sampling (Dry Season, October 2024)

Date	No. of samples analysed	Compound	Sample concentration range (mg/kg)	No. of sample locations with concentrations >LOR	No. of Samples exceeding 2-6 years* Finfish (all species) (FSANZ, 2017)	No. of Samples exceeding 2-6 years* Crustaceans (all species) (FSANZ, 2017)
Stuart Highway Boat Ramp - BIO088						
15 October 2024	16 samples (13 fin fish and 3 crustaceans)	PFOS	0.013 (BIOAFA444, BIOAFA461) - 0.142 (BIOAFA459)	13	12	0
		PFOA	<0.001	0	0	0
		PFOS+PFHxS	0.008 (BIOAFA489) - 0.103 (BIOAFA492)	13	2	0
Galloping Jacks Boat Ramp - BIO078						
16 October 2024	24 samples (21 fin fish and 3 crustaceans)	PFOS	0.011 (BIOAFA502) - 0.092 (BIOAFA520)	21	21	0
		PFOA	<0.001	0	0	0
		PFOS+PFHxS	0.011 (BIOAFA502) - 0.094 (BIOAFA520)	21	7	0

* Median consumption by children 2-6 years old

8.0 Interpretive analysis

8.1 Hydrogeology

The SWLs were measured in groundwater monitoring wells and converted to estimated groundwater elevations (in mAHD). Depth to groundwater measurements are presented in **Table T1a** (**Appendix C**) and the inferred potentiometric contours for the monitoring wells for the October 2024 and April/May 2025 monitoring events are presented in **Figures F6.1 – F6.2** (**Appendix A**) respectively. Base-wide groundwater elevation data collected for presentation of potentiometric contours was collected during a separate gauging event documented in Dry Season SER 2024 (AECOM, 2025b) and End of Wet Season SER 2025 (AECOM, 2025d) in **Appendix B**. Further groundwater elevation discussion can be found in **Section 7.1.3.**

The inferred groundwater flow direction during the April/May 2025 monitoring event (the most recent in which groundwater levels were recorded) was to the west, which is consistent with historical observations / measurements. The range of recorded groundwater levels across the monitoring area is presented in **Table 25**, with the lower number showing the lowest groundwater elevation recorded furthest west near Katherine River, and the highest groundwater elevation recorded furthest east on base.

Table 25 Recorded groundwater elevations 2021 - 2025

Year of sampling event	Recorded groundwater range (mAHD)
2021	96.24 to 137.29
2022	92.32 to 130.61
2023	91.24 to 129.92
2024	89.55 to 137.21
2025	89.59 to 133.53

The range in elevations recorded in 2024 and 2025 are slightly larger compared to that recorded during previous events.

Reduced rainfall infiltration through the dry season typically results in groundwater elevation decreasing by up to approximately 8 metres from the end of the wet season to the end of the dry season. The water level reduction appears to have minimal impact on groundwater flow direction but may alter the rate of PFAS migration due to fluctuating hydraulic gradients. These can change sporadically, influenced by rainfall patterns, which can be highly localised within the monitored area.

Further, the mass discharge of PFAS from source areas is expected to be higher during the wet season, when the water table rises and mobilises PFAS from the dry season vadose zone.

Historical groundwater levels from registered bores do not show long-term rising or falling trends, indicative of hydraulic response in a very transmissive aquifer. The major springs on the river are the discharge points for these systems (Coffey, 2018a). Groundwater expression areas have also been observed in Tindal Creek on base, where PFAS impacted groundwater expresses intermittently into surface water that flows directly into Tindal Creek (AECOM, 2025f).

8.2 Groundwater first-time detections and new maximum concentrations

Groundwater concentrations for PFOA and PFOS+PFHxS, compared to assessment criteria and historical results in **Table T2** (**Appendix C**). Whilst PFBS and PFHxS values are now available for assessment under the revised drinking water guidelines, risk is predominantly discussed with relevance of PFOA and PFOS+PFHxS concentrations, and future reporting will include reviews.

PFAS concentrations were similar to those previously reported (historical) since the 2018 DSI (Coffey, 2018a). The highest PFAS concentrations reported in the monitoring period were detected at a monitoring well located within the former FTA (MW803D), which had a PFOS+PFHxS concentration of 8,170 µg/L during the May 2025 sampling event, and where remediation actions have recently been completed.

The highest PFOS+PFHXS concentrations reported in the monitoring period for off-base locations were detected at:

- MW400 (2.21 µg/L), located in Katherine East, in October 2024. This sampling location is an impacted well located in the centre of the plume off-base.
- MW134 (2.06 µg/L), located in Katherine research station, in May 2025. This location is an impacted well located in the centre of the plume off-base. This well was not sampled in earlier rounds due to a blockage. The well was cleared by air blasting in November 2024.

8.2.1 First time detections of PFOA and / or PFOS+PFHxS

First-time detections of PFOA and / or PFOS + PFHxS reported during the monitoring period include:

- First time detections of PFOS+PFHxS were reported at the following private bores in the Cossack area during the start of wet season sampling event. It should be noted that these detections coincide with the adoption of low-level analysis, where the limit of reporting is reduced to 0.002 µg/L, at each of the following locations:
  - POT125 (0.006 µg/L)
  - POT126 (0.003 µg/L)
  - POT127 (0.003 µg/L)
  - POT130 (0.004 µg/L)
  - POT131 (0.006 µg/L)
  - POT198 (0.003 µg/L)
  - POT201 (0.002 µg/L).
- First time detection of PFOS (0.04 µg/L) and PFOS+PFHxS (0.06 µg/L) was reported for MW814, which is related to the first time sampling result to replace monitoring at POT122, located west of the Katherine River in the centre of the plume. Sampling was conducted at the end of wet season 2025 sampling event, and exceeded drinking water and ecological criteria for PFOS.
- First time detection of PFOA (0.003 µg/L), PFOS (0.102 µg/L), PFHxS (0.085 µg/L) and PFBS (0.015 µg/L) was reported for MW815 during the end of wet season 2025 sampling event. MW815 is considered a northern boundary sentinel well which replaces the previously sample location POT119, and results are for the first time sampling. The reported concentrations for PFOA and PFOS were reported above adopted drinking water criteria, and PFOS above ecological criteria.

8.2.2 New maximum concentrations of PFOA and / or PFOS + PFHxS

New maximum concentrations for PFOA and / or PFOS + PFHxS were reported during the monitoring period at twelve locations, all new maximums are detailed above in **Table 18** which are within close range of previous historical maximums, with the exception of:

- At MW803D, located immediately down gradient of the FTA remediation zone, concentrations of PFOS+PFHxS rose from a previous historical maximum of 2,520 µg/L to 8,170 µg/L during the October 2024 sampling event. This result was reported when sampling occurred during the FTA remediation civil works, where disturbed soils from earth moving activities likely contributed to a temporary increased in PFAS mass released from the pore space in the exposed soils. Results fell to historical norms in the subsequent months after works were completed in November 2024, which included compaction and capping of treated soils.

There have been no new notable detections at the southernmost sentinel wells located off-base (MW403, POT111 and MW144) indicating that the plume extent in the southern portion has not expanded to the sentinel wells.

The previous northern sentinel well (POT119) was replaced by MW815 prior to this sampling period due to inaccessibility of the well. POT119 had not been sampled since April 2021 and had not recorded any detectable levels of PFAS during that or prior sampling rounds. MW815 recorded concentrations above drinking water criteria when first sampled in May 2025, these results were confirmed by resampling in early June 2025. This may indicate that the extent of the migration of the plume has increased north since 2021.

MW136, located further north along Gorge Road was sampled for the first time since 2017, recording its highest PFOS concentration (0.05 µg/L) above ecological criteria during the October sampling round, when resampled in May MW136 recorded no detectable levels of PFAS. Due to the lack of sample locations between MW815 and MW136 or further along the northern plume boundary, identification of the northern boundary extent of the plume is currently incomplete.

The spatial and magnitude concentration trends indicate that the PFAS plume may be migrating westward within the Cossack area, particularly at the end of the wet season. The mechanism for this observed westward expansion is not currently understood and may be associated with localised groundwater flow dynamics, preferential pathways within the aquifer, surface water levels and flows in Katherine River, and/or groundwater extraction in the area. The interaction between these potentially completing hydrological processes is being assessed separately from the OMP.

8.3 Management zone limit exceedances

New reported concentrations of PFOA and PFOS + PFHxS greater than their expected zone area reported during the monitoring period include:

8.3.1 Dry season 2024

- POT112, located in groundwater zone 5 (< Criteria) reported concentrations of PFOS+PFHxS (0.18 µg/L) above the 0.07 µg/L upper limit during the October 2024 sampling event. POT112 has consistently reported concentrations of PFOS and PFOS+PFHxS above the LOR since its first sampling in November 2017, ranging between 0.02 µg/L (April 2024) and 0.14 µg/L (January 2024).
- MW400, located in groundwater zone 1 (> Recreational & Drinking water criteria) reported concentrations of PFOS+PFHxS (2.21 µg/L) above the 2.00 µg/L upper limit during the October 2024 sampling event. MW400 is located in the centre of the plume, and this result is within historical ranges for the location.

8.3.2 Start of wet season 2024 - 2025

- POT112, located in groundwater zone 5 (< Criteria) reported concentrations of PFOS+PFHxS above the 0.07 µg/L upper limit of 0.09 µg/L and 0.10 µg/L being recorded in November and December sampling events respectively.
- POT113, located in groundwater zone 5 (< Criteria) reported concentrations of PFOS+PFHxS above the 0.07 µg/L upper limit of 0.13 µg/L, 0.09 µg/L and 0.018 µg/L being recorded in November, December and January sampling events respectively.

8.3.3 End of wet season 2024 - 2025

- OTH117, located in groundwater zone 5 (< Criteria) reported concentrations of PFOS+PFHxS (0.113 µg/L) above the 0.07 µg/L upper limit during the February 2025 sampling event.
- POT113, located in groundwater zone 5 (< Criteria) reported concentrations of PFOS+PFHxS above the 0.07 µg/L upper limit of 0.498 µg/L, 0.380 µg/L and 1.630 µg/L being recorded in February, March and April sampling events respectively.
- MW815, located in groundwater zone 5 (< Criteria) reported concentrations of PFOS+PFHxS (0.187 µg/L) above the 0.07 µg/L upper limit during the May 2025 sampling event. The well was resampled with the result confirmed in early June 2025.

8.4 Groundwater – temporal trends

8.4.1 Approach to trend analysis

A summary of PFOS, PFOS+PFHxS and PFOA concentrations (includes all current and historical data) for eight sub-regions within the Management Area is specified in **Table 26** (below) and trend analysis results are discussed and presented in tabular form **Section 8.4.3** to **Section 8.4.9**. Temporal graphs and Mann-Kendall statistical trend analysis for each of the seven sub- regions are presented in **Appendix D** and **Appendix E**, respectively.

The laboratory standard LOR for PFOS, PFOS+PFHxS, and PFOA concentrations is 0.01 µg/L, indicating that concentrations below this threshold are not quantifiable by the laboratory methods used. Low level analysis was conducted for locations usually reported below the standard LOR to understand low concentration lateral distribution of PFAS to the west of Katherine River, and meet reporting requirements for the revised drinking water criteria, which require reduced laboratory LORs (0.002 µg/L) for assessment. Locations that had insufficient data (i.e. less than four data points) or concentrations that were reported below the LOR are labelled with "*not completed (nc)*" next to location ID.

Locations utilising alternative wells are included in **Appendix E** but are not considered for reported trends. Limitations of Mann-Kendall analysis is discussed in **Section 8.4.2**, with particular regard for the impacts that seasonality has on the appropriateness of adopting Mann Kendall to undertake a statistical trend analysis.

Table 26 Summary of sub-regions for the groundwater monitoring area

Sub-region within the management area	Groundwater monitoring well IDs
On-base cross/upgradient	MW133, MW403, OTH111, OTH112,
On-base FTA	MW104, MW231, MW803D, MW803I, MW803S
On-base minor source areas (MEOMS, Fuel Farm 1 and Fuel Farm 2)	MW244, MW278, MW285
On-base FSA	MW127, MW129, MW146, MW149, MW802D, MW802I, MW802S,
On-base central and boundary plume	MW106, MW107, MW109S, MW109D, MW110, MW111D, MW111S, MW117*, MW118S*, MW118D, MW118I, MW119, MW130, MW131, MW732*, MW801S
Off-base central transects	MW134 (MW732*), MW135, MW400, POT111
Off-base at the Katherine Township	MW136, MW137, MW138 (OTH116*), MW140, MW142, MW144, MW815, OTH113, OTH115,
Off-base and west of Katherine River	MW814, OTH114, OTH117, OTH118, OTH119, OTH120, POT112, POT113, POT114, POT120, POT121, POT124, POT125, POT126, POT127, POT128, POT129, POT130, POT131, POT198, POT201

* Alternative location sampled in lieu of primary location being unable to sample – cells highlighted red in **Appendix E** where the alternative location concentration has been used.

The groundwater temporal graphs only include locations which consistently report greater than the LOR for respective analytes. Where sample results were less than the LOR, half the LOR was adopted for graphing purposes, which is one of several options advised by ANZG (2018) in this scenario. All data substitution approaches have shortcomings and the potential to introduce bias into a modified dataset, especially if a large portion of the data are recorded as <LOR, as the substitutions can amplify the sample variance from the value modifications. For this reason, temporal data plotting has been limited to datasets with values consistently >LOR. It is also noted that LORs have been based on the drinking water quality guidelines, and hence these plots allow depiction of trends in relation to current drinking water advisory, even where resolution is lost when values are reported less than the LOR. In performing the substitution of half-LOR values, this approach is not considered to impact on the objectives of this report and ability to adequately interpret the results.

Table 27 summarises the wells selected for the temporal graphs per sub-region.

Table 27 Summary of locations selected for groundwater temporal plots

Sub-region	Groundwater monitoring well IDs	Analyte	Graph ref
On-base cross/upgradient	MW133, MW403, OTH111, OTH112	PFOA	**G1**
		PFOS+PFHxS	**G2**

Sub-region	Groundwater monitoring well IDs	Analyte	Graph ref
On-base FTA	MW104, MW231, MW803D, MW803I, MW803S	PFOA	**G3**
		PFOS+PFHxS	**G4**
On-base minor source areas (MEOMS, Fuel Farm #1 and #2)	MW244, MW278, MW285	PFOA	**G5**
		PFOS+PFHxS	**G6**
On-base FSA	MW127, MW129, MW146, MW149, MW802D, MW802I, MW802S	PFOA	**G7**
		PFOS+PFHxS	**G8**
On-base central and boundary plume	MW107, MW110, MW117, MW118	PFOA	**G9**
		PFOS+PFHxS	**G10**
	MW134, MW135, MW732, MW400	PFOA	**G11**
		PFOS+PFHxS	**G12**
Off-base in Katherine	MW137, MW138, MW140, OTH116	PFOA	**G13**
	MW136, MW137, MW138, MW140, MW142, MW144, OTH113, OTH115	PFOS+PFHxS	**G14**
Off-base and west of Katherine River	POT113, POT201, OTH114, OTH119	PFOA	**G15**
	OTH114, OTH117, OTH118, OTH119, POT112, POT113, POT114, POT120, POT121, POT122, POT124, POT125, POT127, POT128, POT129, POT130, POT131, POT198, POT201	PFOS+PFHxS	**G16a-c**

8.4.2 Limitations of trend analysis

Statistical trend analysis was undertaken for select sub-regions of the Management Area. However, due to seasonal variation of precipitation, corresponding fluctuations in groundwater levels, and seasonally influenced variance in PFAS concentrations, there are currently insufficient data to reliably identify statistical trends for all locations. This is particularly noticeable when examining temporal graphs (**Appendix D**) where seasonal variance was present at several locations.

Additionally, Mann-Kendall statistical analysis has limited capability to accurately identify temporal changes when concentrations are close to the LOR. Mann-Kendall analysis is considered a tool for detecting single variable trends, such as concentrations of PFAS, and is a robust approach to nonparametric datasets. However, limitations of this analysis in the current application to the base and surrounds include the potential for extraneous variables such as seasonal variation and the aquifer conditions to potentially generate false-positive or false-negative trend outputs, such as incorrectly ascribing concentration changes to remediation efforts. To this end, the current Mann-Kendall approach is employed as an ‘exploratory’ first step, assessing coarse trends across the monitoring area, with future investigations to consider approaches that can interpret multiple variables such as seasonality, multi-variable statistical tests, nonlinear regression or a multiple regression model.

Further monitoring is required before statistical trends in seasonal variability can be effectively assessed. Collection of groundwater samples during both wet and dry season conditions has been conducted only once (2024) since the start of the OMP in 2019. As groundwater samples have only been collected twice at the end of the wet season there are insufficient data available to evaluate temporal trends between and within wet and dry season conditions. The current OMP (Defence, 2025a) prescribes biannual sampling at all on- and off-base groundwater sampling locations, which should allow for accurate trends analysis once additional monitoring years are completed.

Tracking of changes in the nature and location of PFAS throughout the Management area will become more relevant following the recent remedial activities. Data from multiple monitoring events after remediation actions are completed will be required before meaningful data trends can be discerned.

8.4.3 On-base cross and upgradient trends

Monitoring locations MW133 (northern perimeter), MW403 (southern perimeter), OTH111 (across- and up-gradient) and OTH112 (up-gradient of sources) represented locations on-base cross gradient or upgradient of the on-base PFAS source areas.

Historical concentrations of PFOA in the on-base cross and upgradient locations are shown graphically in **Graph G1** (**Appendix D**). Reported PFOA concentrations within this region of the Management Area remain below the laboratory LOR and therefore there is no observable trend to discuss.

Historical concentrations of PFOS+PFHxS in the subject on-base cross and upgradient locations are shown graphically in **Graph G2 (Appendix D**) and the PFOS and PFOS+PFHxS concentrations for the current monitoring period are summarised in **Table 28** below, and presented in full as **Table T2** (**Appendix C**).

While no discernible trends are identifiable from temporal graphs **Graph G1** and **G2** for any on-base cross and upgradient locations, the consistency in low to non-detectable concentrations indicate that the northern, eastern and southern extents of the plume have not spread, hence the northern, eastern and southern extent of the Management Area remains unchanged. However, OTH111, which first had a detection of PFOS+PFHxS in 2021, reported a historical high concentration of 0.054 µg/L in May 2025. It should be noted that this is the first time this location has been sampled during wet season conditions since April 2021, and therefore it is possible that the concentration recorded here is not outside the normally expected concentration range for late wet season conditions. Additional wet season sampling will need to be conducted to determine if this concentration is representative of this location, if there is an emerging trend, or if the May 2025 result is an anomaly.

Table 28 Groundwater summary results - On-base cross and upgradient

Location ID	Analyte	Historical range[1] (µg/L)	OMP Events (OMR July 2024 - May 2025) (µg/L)		
			Dry season (July 2024 - October 2024)	Start of wet season (November 2024 - January 2025)	End of wet season (February 2025 - May 2025)
MW133 (Northern perimeter)	PFOS	<LOR	0.01	n/s	<LOR
	PFOS+PFHxS	<LOR	0.03	n/s	0.006
	PFOA	<LOR	<LOR	n/s	<LOR
MW403 (Southern perimeter)	PFOS	<LOR - 0.02	0.02	n/s	<LOR
	PFOS+PFHxS	<LOR - 0.02	0.02	n/s	<LOR
	PFOA	<LOR	<LOR	n/s	<LOR
OTH111 (across and up-gradient)	PFOS	<LOR - 0.02	<LOR	n/s	0.049
	PFOS+PFHxS	<LOR - 0.02	<LOR	n/s	0.054
	PFOA	<LOR	<LOR	n/s	<LOR
OTH112 (up-gradient)	PFOS	<LOR - 0.01	<LOR	n/s	<LOR
	PFOS+PFHxS	<LOR - 0.01	<LOR	n/s	<LOR
	PFOA	<LOR	<LOR	n/s	<LOR

n/s = not sampled

[1] historical data range since monitoring commenced in 2017 prior to current OMR monitoring period.

Orange shading indicates one or more results above the historical range.

In periods with multiple sampling events, the maximum value for the period is presented.

PFOS+PFHxS data are also visualised in boxplots, in **Figure 4**. For this analysis, <LOR values were replaced with the LOR which represents a conservative assumption that <LOR values represent the maximum possible concentration (ANZG, 2018).

Data from this area are atypically high concentrations in the current event, (i.e. values reported greater than the overall 75th percentile of the dataset, represented by the 'top edge' of the 'box' in each plot). These are dry season samples in the case of MW133 and MW403, and an end of wet season sample in the case of OTH111. Additionally, MW133 exhibited an atypically low end of wet reading at MW133 (i.e. falling below the 25th percentile 'lower box edge). These results indicate variability in concentrations and may suggest additional temporal and spatial data are warranted to determine if these potential outliers are statistically significant.

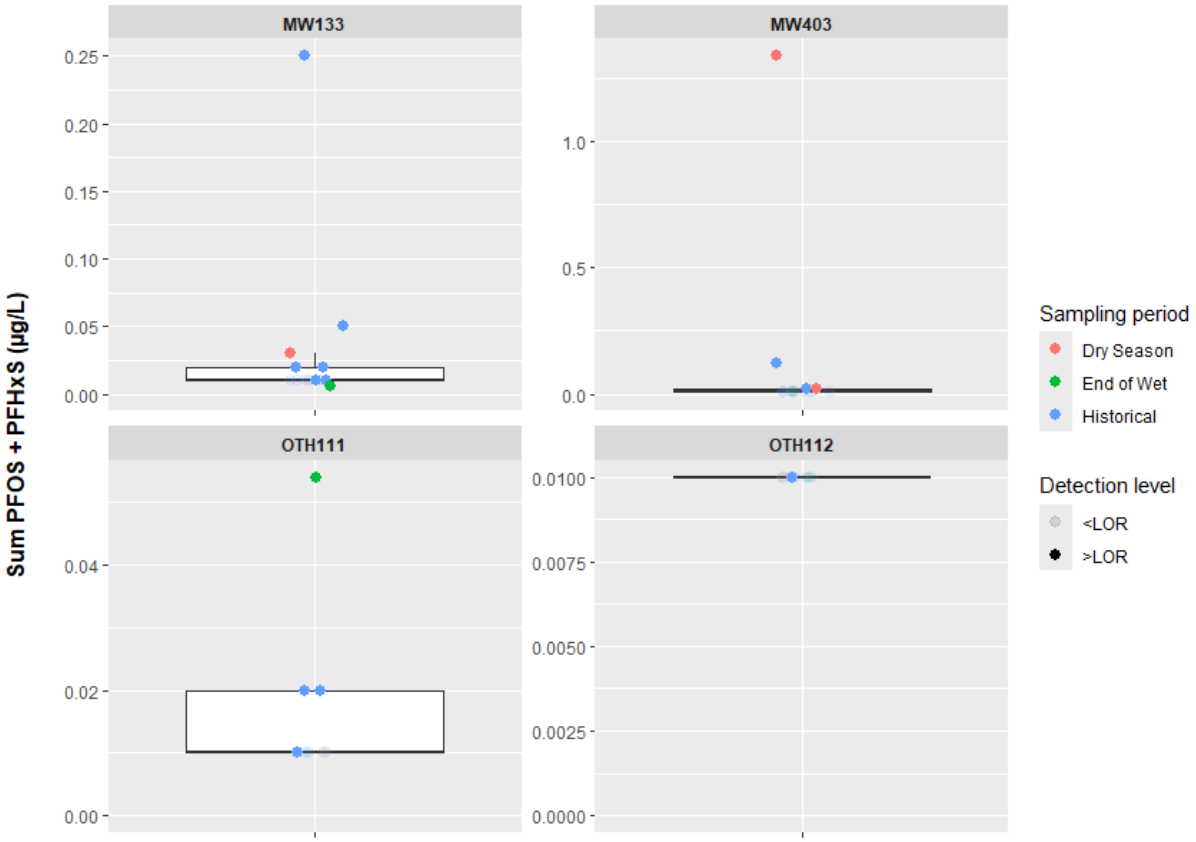

Figure 4 Boxplots showing historical and current PFOS + PFHxS concentrations at on-base cross and upgradient areas

8.4.4 On-base FTA trend analysis

The FTA is one of the two key on-base source areas for PFAS in groundwater and is monitored through five groundwater wells. Monitoring location MW235 was decommissioned prior to remediation works at the FTA. As mentioned in **Section 6.2**, this source area is listed as a priority for action under the PMAP with soil remediation completed in 2022 - 2024 and groundwater treatment ongoing.

Historical concentrations of PFOA and PFOS+PFHxS in these on-base FTA locations are shown graphically in **Graph G3** and **G4** (**Appendix D)** respectively. PFOS, PFOS+PFHxS and PFOA results are summarised in **Table 29**, and presented in full as **Table T2,** (**Appendix C**). All monitoring locations reported PFOS+PFHxS and PFOA concentrations above LOR for the monitoring period.

Table 29 Groundwater summary results - On-base FTA

Location ID	Analyte	Historical Range[1] (µg/L)	OMP events (OMR August 2024 - May 2025) (µg/L)		
		Min - Max	Dry season (August 2024 - October 2024)	Start of wet season (November 2024 - January 2025)	End of wet season (February 2025 - May 2025)
MW104	PFOS	3.74 - 2,200	53.9	n/s	31.6
	PFOS+PFHxS	5.52 - 2,990	68.3	n/s	40.7
	PFOA	0.23 - 180	2.96	n/s	1.61
MW231	PFOS	79.8 - 3,160	338	1,040	470
	PFOS+PFHxS	139 - 6,160	727	2,120	726
	PFOA	11.4 - 672	108	333	72.9
MW803D	PFOS	1,150 - 2,190	8,020	1,550	1,230
	PFOS+PFHxS	1,370 - 2,500	8,170	1,830	1,430
	PFOA	31.0 - 44.3	28.8	50.4	34.8
MW803I	PFOS	57.0 - 91.2	40.8	73.1	66.4
	PFOS+PFHxS	112 - 172	78.7	143	134
	PFOA	5.50 - 9.65	5.09	9.43	9.16
MW803S	PFOS	208 - 285	157	300	113
	PFOS+PFHxS	470 - 786	351	490	178
	PFOA	43.4 - 110	50.0	49.1	15.0

n/s = not sampled.

[1] historical data range since monitoring commenced in 2017, prior to current OMR monitoring period.

Green shading indicates one or more results below the historical range.

Orange shading indicates one or more results above the historical range.

In periods with multiple sampling events, the maximum value for the period is presented.

At MW231 in September 2024, PFOS, PFOS+PFHxS, and PFOA concentrations exceeded relevant criteria but remained within historical ranges. Compared to the previous monitoring events in October 2022 and 2023, a reduction in PFOS+PFHxS concentrations was observed. MW231 is located directly downgradient of the former FTA evaporation ponds, which have recently undergone remediation. Following remedial activities that occurred between 2022 and 2024, including the removal of evaporation ponds and excavation and treatment of impacted soils beneath and adjacent to the evaporation pond areas since September 2023, a reduction in PFAS mobilisation into groundwater at this location is anticipated.

The newly installed well MW803D recorded its highest PFOS and PFOS+PFHxS concentrations during the October 2024 dry season sampling event, which occurred immediately following remediation works. This peak may be attributed to the disturbance and subsequent release of PFAS from surrounding soils during earthworks. In contrast, the shallower wells MW803I and MW803S did not exhibit this immediate post-remediation spike. However, MW803S had PFOS, PFHxS and PFOA concentrations in February – May that were lower than any previous sample collected from this location between since the well's installation in 2022.

In summary, the data highlights the significance of seasonal influence on the oscillation of PFAS concentrations in groundwater, with the amplitude of concentration change directly proportional to the extent of groundwater intrusion / soil saturation and hence mobilisation of residual PFAS. Additionally, reductions in PFAS concentrations, particularly in concentrations of short chain PFAS compounds at MW803S, may be an early indicator that remedial actions since 2022 are reducing groundwater concentrations directly downgradient of the FTA.

PFOS+PFHxS data are also visualised in boxplots, in **Figure 5**. The results suggest potentially steady or reducing concentrations in these areas, as current sampling values fall within or below the overall 25th – 75th percentile range.

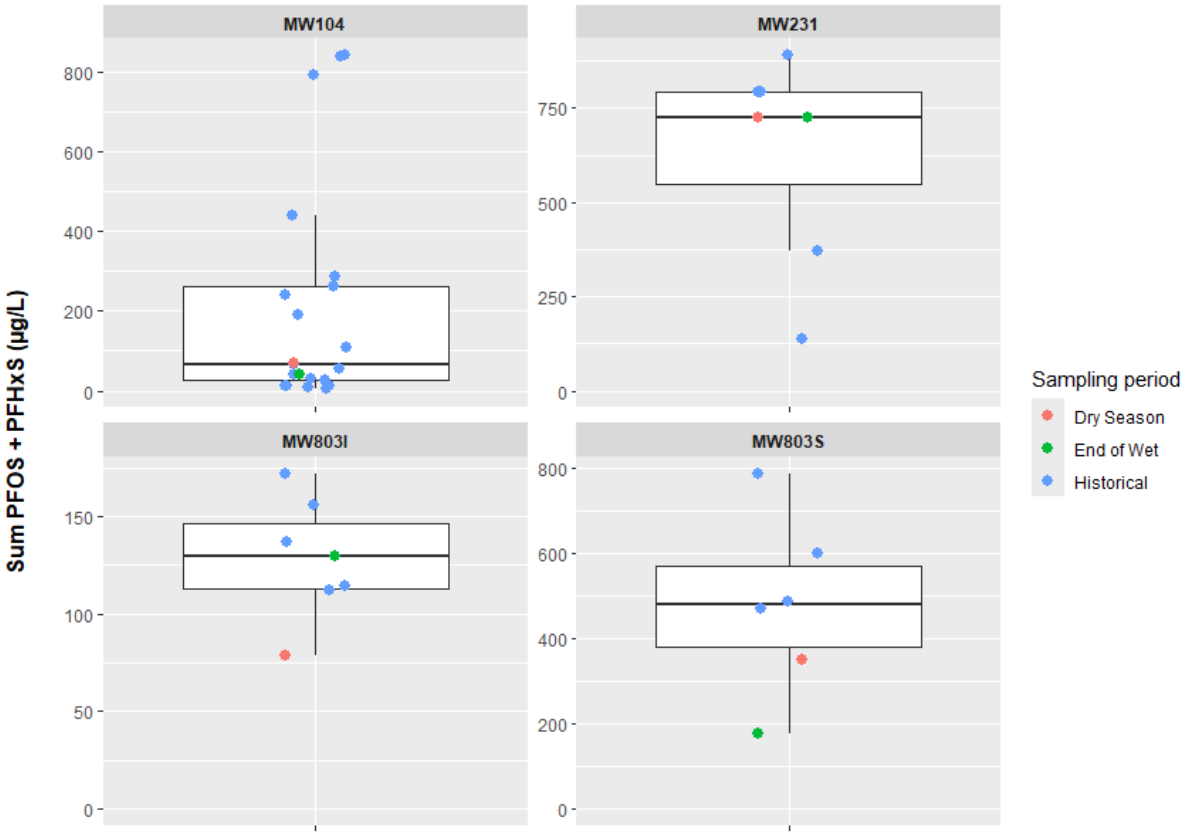

Figure 5 Boxplots showing historical and current PFOS + PFHxS concentrations at on-base FTA areas

8.4.5 On-base minor source areas trend analysis

The on-base minor source areas include the MEOMS (MW244), Fuel Farm 1 (MW278) and Fuel Farm 2 (MW285). All three monitoring wells were sampled during the biannual monitoring events in October 2024 and May 2025.

Historical concentrations of PFOA and PFOS+PFHxS in the vicinity of the on-base MEOMS, Fuel Farm 1, and Fuel Farm 2 areas are respectively shown graphically in **Graph G5** and **G6** (**Appendix D**). PFOS, PFOS+PFHxS and PFOA results are summarised in **Table 30**, and presented in full as **Table T2** (**Appendix C**).

No discernible trends are identifiable for MW278 and MW285 from temporal graphs **Graph G5** and **G6** (**Appendix D**) for any of the on-base minor source areas. Additional wet season data applied to a statistical analysis that accounts for seasonality would likely be needed to understand the PFAS concentration trends at these on-base minor source areas.

Table 30 Groundwater summary results - MEOMS, Fuel Farm 1 and Fuel Farm 2

Location ID	Analyte	Historical range[1] (µg/L)	OMP events (OMR August 2024 - May 2025) (µg/L)		
		Min - Max	Dry season (August 2024 - October 2024)	Start of wet season (November 2024 - January 2025)	End of wet season (February 2025 - May 2025)
MW244 (MEOMS)	PFOS	3.3 - 14	5.64	n/s	8.68
	PFOS+PFHxS	4.12 - 20.6	9.36	n/s	13.3
	PFOA	0.11 - 0.76	0.69	n/s	0.81
MW278 (Fuel Farm 1)	PFOS	2.7 - 15	7.66	n/s	7.53
	PFOS+PFHxS	8.74 - 26.1	11.6	n/s	10.7
	PFOA	0.11 - 0.35	0.20	n/s	0.12
MW285 (Fuel Farm 2)	PFOS	0.14 - 0.77	0.20	n/s	0.36
	PFOS+PFHxS	0.32 - 1.03	0.45	n/s	0.56
	PFOA	<LOR - 0.02	<LOR	n/s	<LOR

n/s = not sampled.

[1] historical data range since monitoring commenced in 2017, prior to current OMR monitoring period.

In periods with multiple sampling events, the maximum value for the period is presented. Orange shading indicates one or more results within the multiple events were reported above the historical range.

Concentrations of PFOA at MEOMS monitoring location MW244 in May 2025 (end of wet season) were reported to be above historical ranges and may be exhibiting an increasing trend, however, PFOA concentrations are within the same order of magnitude to historical ranges. MW278 and MW285 reported PFOS+PFHxS and PFOA concentrations within the historical concentrations range during the monitoring period.

PFAS concentrations reported from MEOMS, Fuel Farm 1 and Fuel Farm 2 have not shown significant changes in concentrations or reported constituent compounds since sampling was first conducted at these locations in 2016 / 2017. PFOS+PFHxS data are visualised in boxplots, in **Figure 6**.

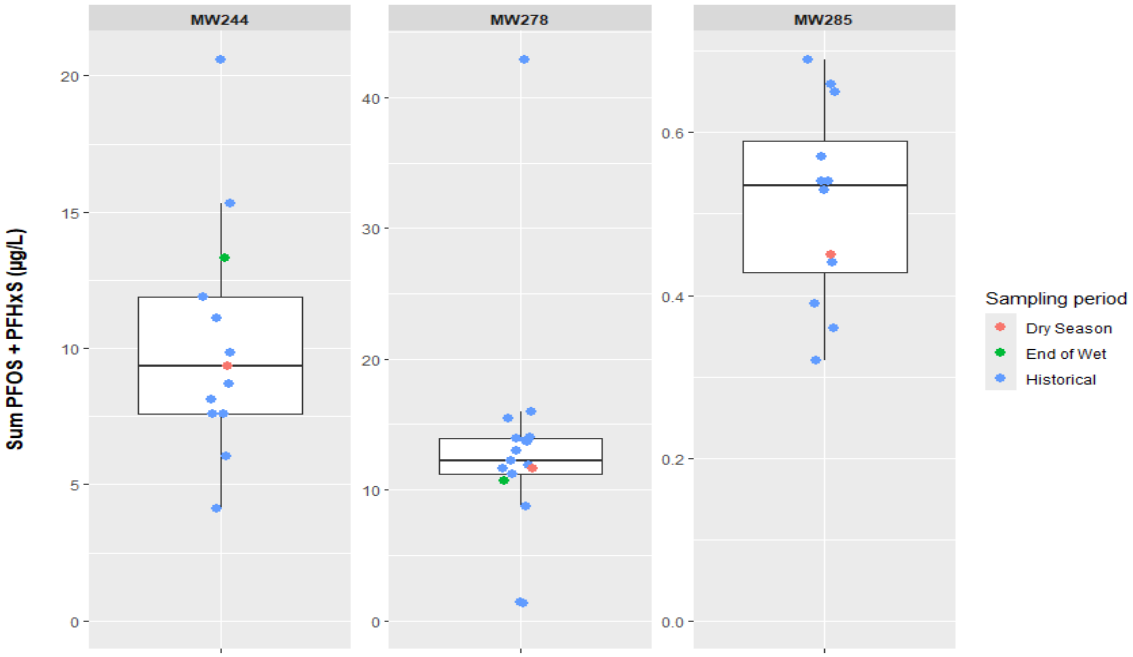

Figure 6 Boxplots showing historical and current PFOS + PFHxS concentrations at on-base minor source locations

8.4.6 On-base FSA trend analysis

The FSA is the second key source area and is located within the central part of base. All seven monitoring wells were sampled during the biannual monitoring event in October 2024 and May 2025.

Historical concentrations of PFOA and PFOS+PFHxS in the vicinity of FSA are shown graphically in **Graph G7** and **G8** (**Appendix D**). PFOS, PFOS+PFHxS and PFOA results are summarised in **Table 31**, and presented in full as **Table T2** (**Appendix C**).

Temporal graphs for these locations are presented in **Graph G7** and **G8** (**Appendix D**). No discernible trends are identified in the temporal graphs, while MW129, located in the FSA hardstand area, appears to be increasing in the more recently sampling events. These reported concentrations may be a result of temporary fluctuations and are not above historical results. Additional wet season data applied to a statistical analysis that accounts for seasonality would likely be needed to understand PFAS trends at the FSA.

Table 31 Groundwater summary results - On-base FSA

Location ID	Analyte	Historical range[1] (µg/L)	OMP events (OMR August 2024 - May 2025) (µg/L)		
		Min - Max	Dry season (August 2024 - October 2024)	Start of wet season (November 2024 - January 2025)	End of wet season (February 2025 - May 2025)
MW127	PFOS	1.1 - 26.8	2.34	n/s	3.52
	PFOS+PFHxS	1.53 - 30.2	3.45	n/s	4.92
	PFOA	0.04 - 0.56	0.08	n/s	0.11
MW129	PFOS	32.2 - 860	192	n/s	342
	PFOS+PFHxS	53.7 - 944	326	n/s	497
	PFOA	1.95 - 82.4	56.2	n/s	76.7
MW146	PFOS	15.6 - 151	47.8	n/s	38.7
	PFOS+PFHxS	20.4 - 202	71.2	n/s	52.9
	PFOA	0.67 - 3.51	1.69	n/s	1.55

Location ID	Analyte	Historical range[1] (µg/L)	OMP events (OMR August 2024 - May 2025) (µg/L)		
		Min - Max	Dry season (August 2024 - October 2024)	Start of wet season (November 2024 - January 2025)	End of wet season (February 2025 - May 2025)
MW149	PFOS	37.8 - 2,030	181	n/s	336
	PFOS+PFHxS	51.4 - 3,060	252	n/s	523
	PFOA	1.81 - 68	6.22	n/s	12.6
MW802D	PFOS	3.78 - 8.79	2.87	n/s	2.78
	PFOS+PFHxS	4.94 - 11.2	4.11	n/s	3.64
	PFOA	0.21 - 0.44	0.22	n/s	0.14
MW802I	PFOS	78.3 - 162	57.4	n/s	61.3
	PFOS+PFHxS	104 - 214	76.5	n/s	81.1
	PFOA	3.20 - 7.98	3.04	n/s	3.11
MW802S	PFOS	2.03 - 3.25	2.61	n/s	1.61
	PFOS+PFHxS	7.55 - 12.7	8.91	n/s	7.93
	PFOA	0.23 - 0.37	0.64	n/s	0.25

n/s = not sampled.

[1] historical data range since monitoring commenced in 2017, prior to current OMR monitoring period.

Green shading indicates one or more results below the historical range. Orange shading indicates one or more results above the historical range. In periods with multiple sampling events, the maximum value for the period is presented.

All results obtained during the current monitoring period for PFOS, PFHxS and PFOA were above the LOR for the monitoring period and were within or below the ranges of the historical data set, with minor fluctuation in the concentrations detected between sampling rounds.

PFAS concentrations in groundwater at the FSA remain similar to conditions described during the 2017 investigative period. Concentrations of PFAS are usually higher during the end of wet season sampling events. A review of temporal trend graphs **G7** and **G8** (**Appendix D**) indicates there may be a correlation between end of wet season conditions and higher recorded PFAS concentrations, however, data has not been regularly collected across both wet and dry season conditions to determine if such a correlation exists.

Monitoring location MW129 is located within the FSA hardstand area, and upgradient of the FSA remediation area. The recorded concentrations have not changed significantly since investigations began in 2017. FSA infrastructure appears to continue to contribute to PFAS migration into groundwater in the FSA area, and additional measures to reduce PFAS mobilisation from FSA infrastructure should be explored.

Monitoring location MW127, located approximately 200 metres downgradient of the FSA soil remediation area has not shown any reductions in PFAS concentrations compared to the historical monitoring data from this location. The distance of MW127 from the soil remediation area may be a contributing factor. Future groundwater monitoring events conducted at the FSA will be used to track any measurable decreases in PFAS concentrations in groundwater post soil remediation works.

Nested wells MW802S, MW802I and MW802S all have reported an overall decrease in PFOS, PFHxS and PFOA concentrations since installation in 2022.

PFOS+PFHxS data are also visualised in boxplots, in **Figure 7**.

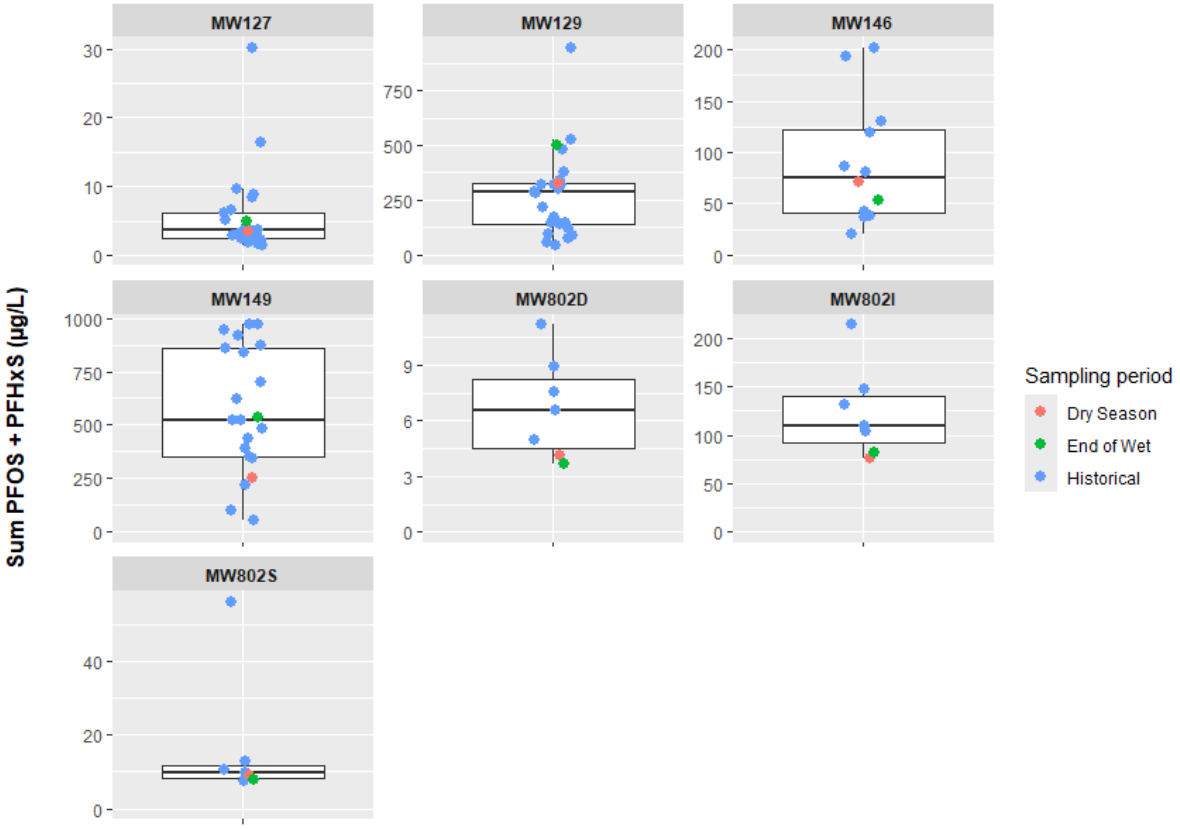

Figure 7 Boxplots showing historical and current PFOS + PFHxS concentrations at on-base FSA locations

Figure 7 indicates several samples as atypically low concentration in the on-base FSA areas, with one exception at MW129 (end of wet sample showing atypically high level).

8.4.7 Base boundary and central plume trend analysis

The central portion of the plume is assessed via seventeen monitoring locations, thirteen located on-base and four off-base. These monitoring wells are located to the west of the airfield, and extend to the suburb of Uralla, located directly west of the base.

Obstructions have been present in three monitoring wells since October 2021 and their alternate locations (detailed in **Section 3.4**):

- MW117, MW118 and MW119.

Historical concentrations of PFOA and PFOS+PFHxS in the in the central portion of the plume are shown graphically in **Graph G9 - G10** (**Appendix D**) for on-base locations, and **Graph G11 - G12** for off-base locations (**Appendix D**). Analytical results for PFOS, PFOS+PFHxS and PFOA are summarised in **Table 32**, and presented in full as **Table T2** (**Appendix C**). No discernible trends were identifiable from temporal graphs **Graph G9 - G12** (**Appendix D**).

Table 32 Groundwater summary results - Base boundary and central plume

Location ID	Analyte	Historical range[1] (µg/L)	OMP events (OMR August 2024 - May 2025) (µg/L)		
		Min - Max	Dry season (August 2024 - October 2024)	Start of wet season (November 2024 - January 2025)	End of wet season (February 2025 - May 2025)
On-base locations					
MW106	PFOS	0.70 - 1.3	0.65	n/s	0.62
	PFOS+PFHxS	0.97 - 1.72	1.03	n/s	1.03
	PFOA	0.03 - 0.05	0.04	n/s	0.04
MW107	PFOS	0.36 - 1.6	0.41	n/s	0.44
	PFOS+PFHxS	0.51 - 2.01	0.60	n/s	0.61
	PFOA	0.02 - 0.05	0.01	n/s	0.01
MW109	PFOS	0.91 - 2.3	1.23	n/s	1.45
	PFOS+PFHxS	1.24 - 3	1.80	n/s	2.07
	PFOA	0.02 - 0.08	0.04	n/s	0.06
MW109D	PFOS	0.24 - 1.9	1.19	n/s	1.43
	PFOS+PFHxS	0.41 - 2.44	1.75	n/s	2.06
	PFOA	0.02 - 0.06	0.04	n/s	0.06
MW110	PFOS	2.46 - 6.9	2.93	n/s	3.38
	PFOS+PFHxS	3.80 - 9	4.23	n/s	4.79
	PFOA	0.1 - 0.2	0.11	n/s	0.12
MW111	PFOS	2.04 - 5.64	1.85	n/s	1.73
	PFOS+PFHxS	2.86 - 6.1	3.27	n/s	2.64
	PFOA	0.07 - 0.14	0.10	n/s	0.06
MW117	PFOS	0.28 - 1.6	n/s	n/s	n/s
	PFOS+PFHxS	0.65 - 2.41	n/s	n/s	n/s
	PFOA	<LOR - 0.6	n/s	n/s	n/s
MW118	PFOS	0.74 - 1.87	n/s	n/s	n/s
	PFOS+PFHxS	1.64 - 3.05	n/s	n/s	n/s
	PFOA	0.03 - 0.08	n/s	n/s	n/s
MW118D	PFOS	0.51 - 1.82	1.47	n/s	1.33
	PFOS+PFHxS	1.33 - 2.85	2.19	n/s	2.00
	PFOA	0.06 – 0.07	0.05	n/s	0.05

Location ID	Analyte	Historical range[1] (µg/L)	OMP events (OMR August 2024 - May 2025) (µg/L)		
		Min - Max	Dry season (August 2024 - October 2024)	Start of wet season (November 2024 - January 2025)	End of wet season (February 2025 - May 2025)
MW118I	PFOS	1.86 - 2.90	1.62	n/s	1.37
	PFOS+PFHxS	2.24 - 4.18	2.44	n/s	2.03
	PFOA	0.06 - 0.10	0.06	n/s	0.05
MW119	PFOS	0.96 - 1.1	n/s	n/s	n/s
	PFOS+PFHxS	1.37 - 1.64	n/s	n/s	n/s
	PFOA	0.03 - 0.04	n/s	n/s	n/s
MW130	PFOS	0.02 - 0.05	0.02	n/s	0.01
	PFOS+PFHxS	0.04 - 0.08	0.05	n/s	0.03
	PFOA	<LOR	<LOR	n/s	<LOR
MW131	PFOS	0.01 - 0.03	0.01	n/s	n/s
	PFOS+PFHxS	0.03 - 0.07	0.03	n/s	n/s
	PFOA	<LOR	<LOR	n/s	n/s
Off-base Locations					
MW134	PFOS	0.58 - 1.45	n/s	n/s	1.34
	PFOS+PFHxS	0.86 - 3.00	n/s	n/s	2.06
	PFOA	0.02 - 0.06	n/s	n/s	0.04
MW135	PFOS	<LOR - 0.10	0.12	n/s	0.04
	PFOS+PFHxS	<LOR - 0.22	0.20	n/s	0.05
	PFOA	<LOR - 0.01	0.01	n/s	<LOR
MW400	PFOS	0.97 - 1.5	1.51	n/s	0.75
	PFOS+PFHxS	1.80 - 2.34	2.21	n/s	1.12
	PFOA	0.03 - 0.05	0.04	n/s	0.03
POT111	PFOS	<LOR	<LOR	n/s	<LOR
	PFOS+PFHxS	<LOR	<LOR	n/s	<LOR
	PFOA	<LOR	<LOR	n/s	<LOR

n/s = not sampled

[1] historical data range since monitoring commenced in 2017, prior to current OMR monitoring period.

Green shading indicates one or more results below the historical range. Orange shading indicates one or more results above the historical range. In periods with multiple sampling events, the maximum value for the period is presented.

Boxplots showing historical and current PFOS+PFHxS concentrations at on-base areas are presented in **Figure 8** and at off-base locations in **Figure 9**.

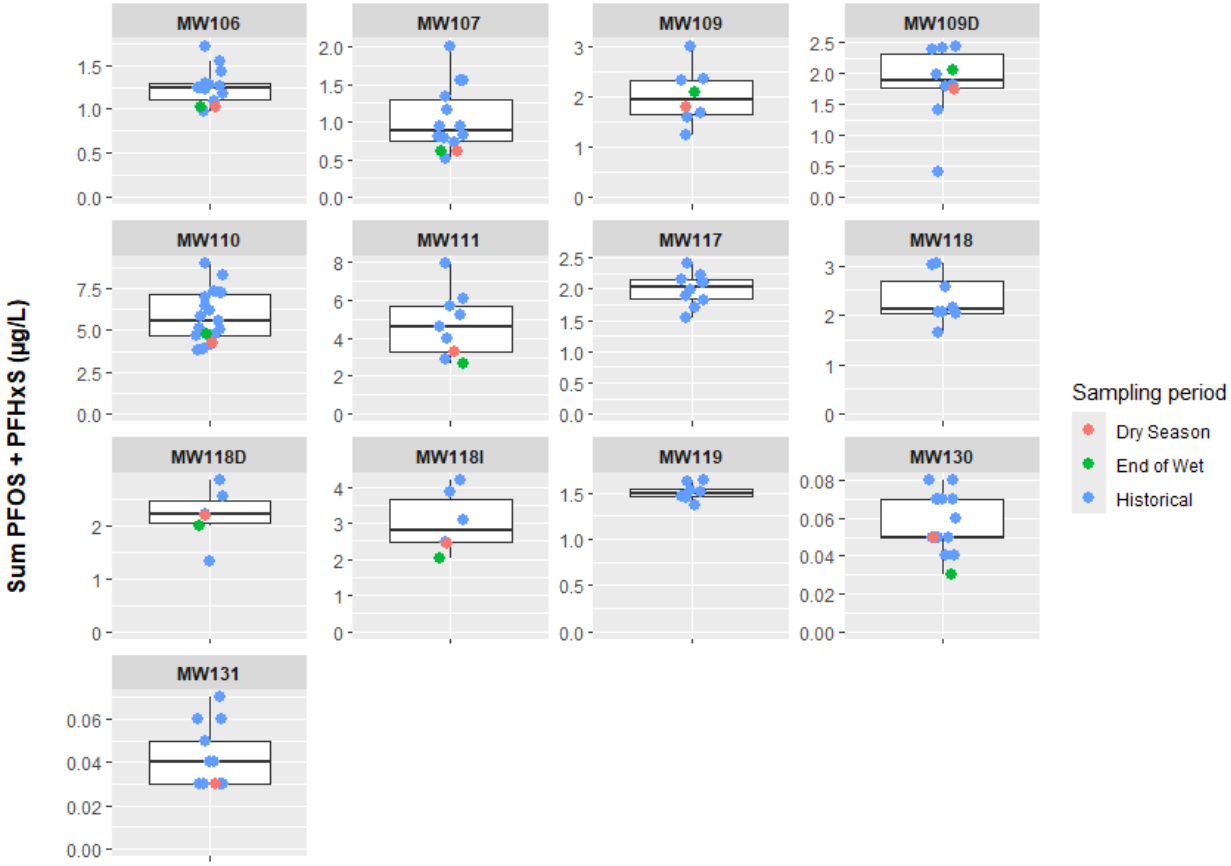

Figure 8 Boxplots showing historical and current PFOS + PFHxS concentrations at on-base locations

No increases in concentrations of PFOS, PFOS+PFHxS and PFOA were detected within samples collected during the monitoring period in this monitoring area. The plume conditions at / near the base boundary and within the central portion of the plume remain similar to conditions described during the 2017 investigative period.

Monitoring location MW400, located off base, reported new maximum PFOS concentrations of 1.51 µg/L, in October 2024. However, the reported was only marginally greater than the historical maximum and consistent with results recorded from this monitoring location. It should be noted that in May 2025 reported a new minimum concentration of 0.75 µg/L for PFOS and 1.12 µg/L for PFOS+PFHxS. New minimum concentrations were also reported at six locations on base over the two monitoring rounds.

Off-base monitoring location MW135, located at the Katherine Research Station, has reported PFOS+PFHxS concentrations above the historical average since 2021. This location tracks the northern edge of the PFAS plume in this area, and therefore the northern plume edge is not completely tracked at this location.

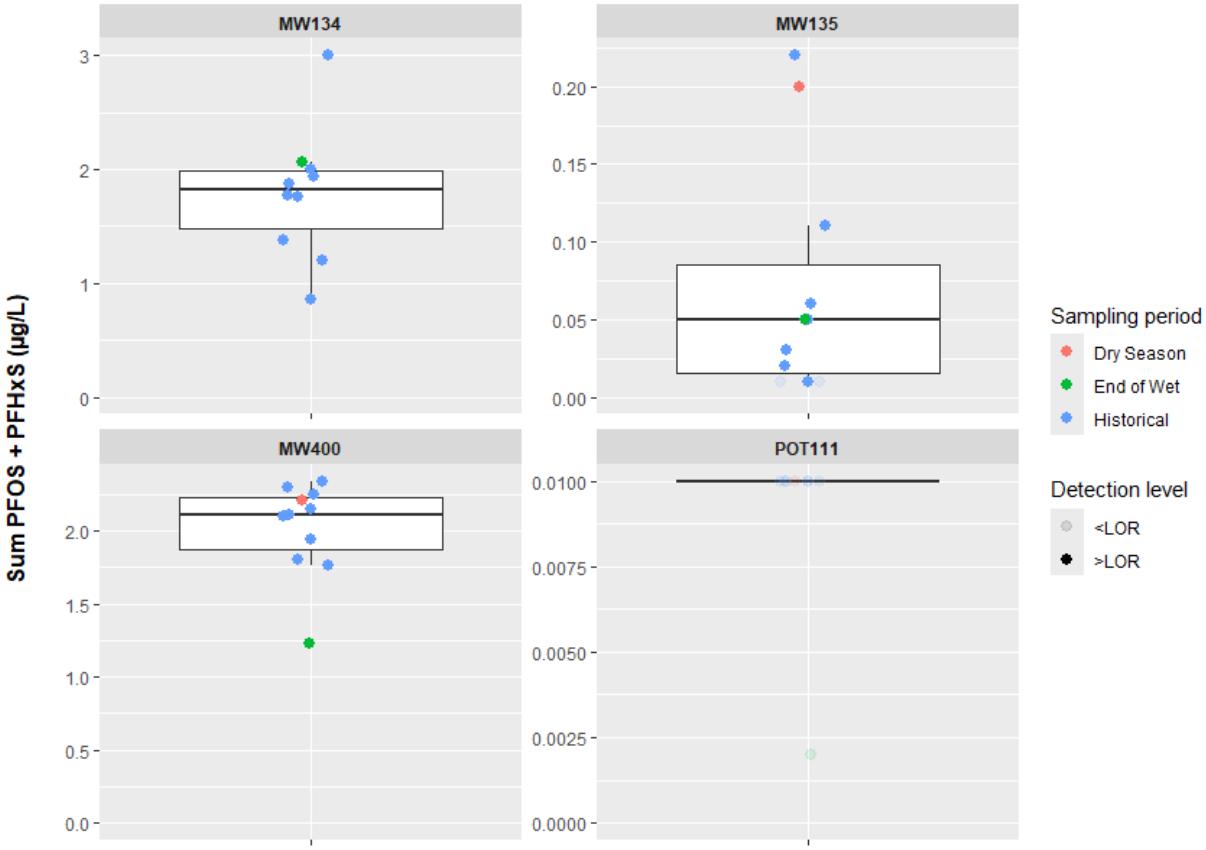

Figure 9 Boxplots showing historical and current PFOS + PFHxS concentrations at off-base locations

Figure 9 indicates one sample as atypically low concentration in the off-base areas, and two as atypically high. These results suggest additional temporal and spatial data may be warranted to determine if these shifts are statistically significant, and to resolve potential seasonal differences.

8.4.8 Off-base Katherine township (east of Katherine River) trend analysis

The off-base Katherine Township monitoring wells are located east of the Katherine River. There is a total of nine locations, which consist of a mixture of private property bores, Katherine Town Council extraction bores, and Department of Defence and Department of Environment, Parks and Water Security (DEPWS) monitoring wells. The locations are presented in **Table 33** below.

Historical concentrations of PFOA and PFOS+PFHxS in the downgradient / leading edge of the plume are shown graphically in **Graph G13** and **Graph G14 Appendix D**). PFOS, PFOS+PFHxS and PFOA results are summarised in **Table 33,** and presented in full as **Table T2** (**Appendix C**). No discernible trends were identifiable from temporal graphs **Graph G13** and **G14** (**Appendix D**).

Table 33 Groundwater summary results - Off-base Katherine Township

Location ID	Analyte	Historical range[1] (µg/L)	OMP Events (OMR August 2024 - May 2025) (µg/L)		
		Min - Max	Dry season (August 2024 - October 2024)	Start of wet season (November 2024 - January 2025)	End of wet season (February 2025 - May 2025)
MW136	PFOS	<LOR - 0.01	0.05	n/s	<LOR
	PFOS+PFHxS	<LOR - 0.01	0.05	n/s	<LOR
	PFOA	<LOR	<LOR	n/s	<LOR

Location ID	Analyte	Historical range[1] (µg/L)	OMP Events (OMR August 2024 - May 2025) (µg/L)		
		Min - Max	Dry season (August 2024 - October 2024)	Start of wet season (November 2024 - January 2025)	End of wet season (February 2025 - May 2025)
MW137	PFOS	0.1 - 0.29	0.19	n/s	0.25
	PFOS+PFHxS	0.19 - 0.52	0.35	n/s	0.44
	PFOA	<LOR - 0.01	<LOR	n/s	<LOR
MW138	PFOS	0.85 - 2.09	n/s	n/s	1.10
	PFOS+PFHxS	1.43 - 3.29	n/s	n/s	1.45
	PFOA	<LOR - 0.03	n/s	n/s	0.01
MW140	PFOS	0.01 - 0.53	0.17	n/s	0.14
	PFOS+PFHxS	0.02 - 0.97	0.30	n/s	0.22
	PFOA	<LOR - 0.02	<LOR	n/s	<LOR
MW142	PFOS	<LOR - 0.09	0.02	n/s	0.02
	PFOS+PFHxS	<LOR - 0.12	0.04	n/s	0.04
	PFOA	<LOR	<LOR	n/s	<LOR
MW144	PFOS	<LOR	<LOR	n/s	<LOR
	PFOS+PFHxS	<LOR	<LOR	n/s	<LOR
	PFOA	<LOR	<LOR	n/s	<LOR
MW815	PFOS	NA	n/s	n/s	0.102
	PFOS+PFHxS	NA	n/s	n/s	0.18
	PFOA	NA	n/s	n/s	0.003
OTH113	PFOS	0.07 - 0.15	0.11	n/s	0.10
	PFOS+PFHxS	0.12 - 0.25	0.19	n/s	0.18
	PFOA	<LOR	<LOR	n/s	<LOR
OTH115 (RN7807)	PFOS	0.13 - 0.15	n/s	n/s	0.11
	PFOS+PFHxS	0.22 - 0.27	n/s	n/s	0.18
	PFOA	<LOR	n/s	n/s	<LOR

n/s = not sampled

[1] historical data range since monitoring commenced in 2017, prior to current OMR monitoring period.

In periods with multiple sampling events, the maximum value for the period is presented. Orange shading indicates one or more results above the historical range. Green shading indicates one or more results below the historical range.

Measured PFAS concentrations in all off-base Katherine Township groundwater monitoring locations have been recorded at or above the drinking water criteria during this monitoring period, except for MW144.

Monitoring location MW136 reported a historical high sum of PFOS+PFHxS concentration of 0.05 µg/L in October 2024. This location monitors the northern most portion of the PFAS plume east of Katherine River and serves as a sentinel well to monitor PFAS concentrations south of nearby private bore users. This location reported a PFAS concentration below the LOR when sampled during the end of wet season sampling event. Future monitoring under the OMP will continue to monitor PFAS concentration trends.

A review of temporal trend graphs **G13** and **G14** (**Appendix D**) indicated there may be a correlation between late wet season conditions and higher recorded PFAS concentrations, however, data has not been collected

regularly across both wet and dry season conditions to determine if late wet and late dry season conditions are significantly different.

Based on data collected over the reported monitoring period, the conditions within the Katherine Township monitoring area remain similar to previous conditions.

Boxplots showing historical and current PFOS + PFHxS concentrations at off-base Katherine township areas are presented in **Figure 10**. For this analysis, <LOR values were replaced with LOR which represents a conservative assumption that <LOR values represent the maximum possible concentration (ANZG, 2018).

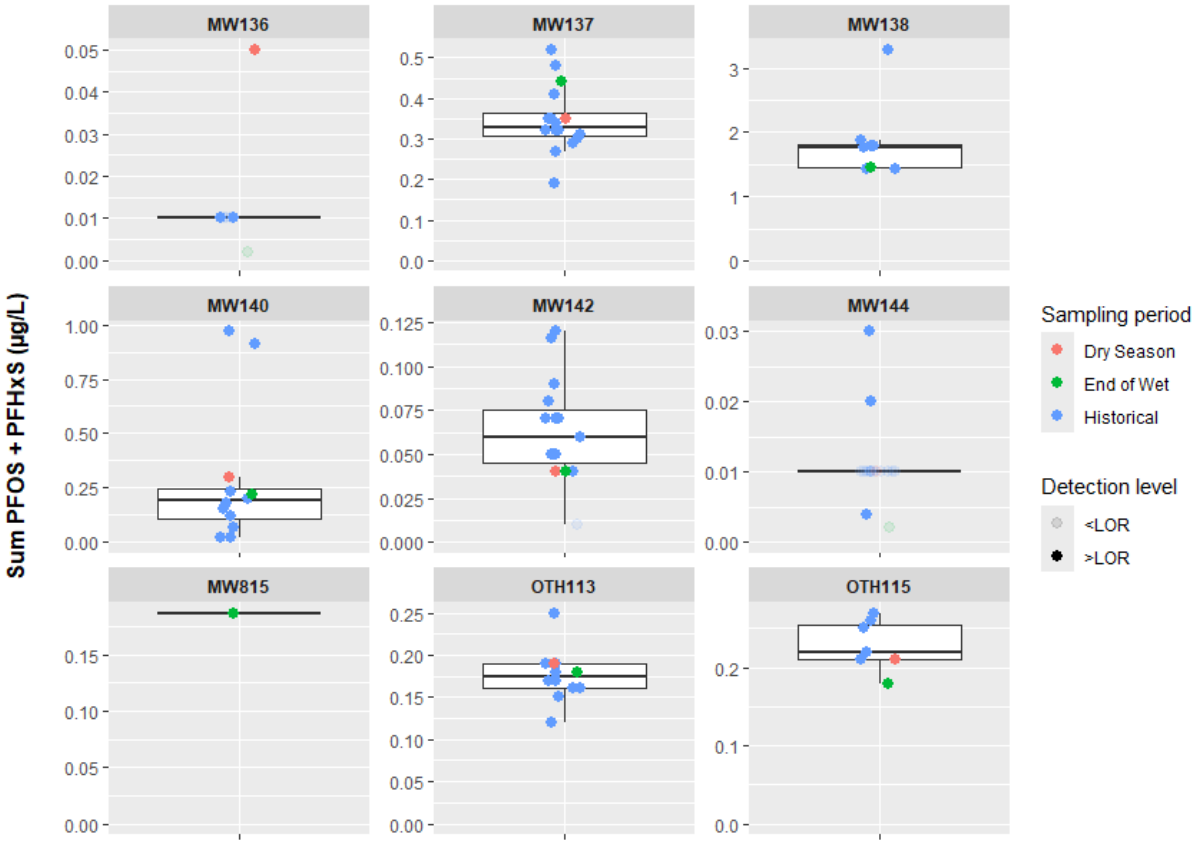

Figure 10 Boxplots showing historical and current PFOS + PFHxS concentrations at off-base Katherine township locations

Figure 10 indicates several samples as showing atypically low concentrations in the off-base Katherine township areas, and several as atypically high. Additional temporal and spatial data collections may be warranted to determine whether these potential shifts are statistically significant, and to resolve potential seasonal differences.

8.4.9 Off-base west Katherine River trend analysis

The off-base monitoring wells installed west of Katherine River are located within the leading edge of the plume of PFAS impacted groundwater. These locations consist of private properties and the Katherine Town Council extraction bores (prefix POT). For privacy reasons, descriptions of the specific locations of private property bores are not included in this section.

Historical concentrations of PFOA and PFOS+PFHxS reported in the off-base monitoring wells west of Katherine River are shown in **Graph G15**, **G16a**, **G16b** and **G16c** (**Appendix D**). Reported PFOS, PFOS+PFHxS and PFOA results are summarised in **Table 34** and presented in **Table T2** (**Appendix C**).

No discernible trends identifiable from temporal graphs **Graph G15** through **G16c (Appendix D**) with exception of monitoring locations OTH117, POT112, POT113, and POT129, which may be exhibiting increasing trends. Additional data will assist with determining trends in monitoring locations west of Katherine River.

Table 34 Groundwater summary results - Off-base west of Katherine River

Location ID	Analyte	Historical range[1] (µg/L)	OMP Events (OMR August 2024 - May 2025) (µg/L)		
		Min - Max	Dry season (August 2024 - October 2024)	Start of wet season (November 2024 - January 2025)	End of wet season (February 2025 - May 2025)
MW814	PFOS	N/A	n/s	n/s	0.04
	PFOS+PFHxS	N/A	n/s	n/s	0.06
	PFOA	N/A	n/s	n/s	<LOR
OTH114 (RN33019)	PFOS	0.04 - 0.34	0.08	n/s	0.14
	PFOS+PFHxS	0.02 - 0.56	0.13	n/s	0.22
	PFOA	<LOR - 0.01	<LOR	n/s	<LOR
OTH117	PFOS	<LOR - 0.02	<LOR	0.016	0.101
	PFOS+PFHxS	<LOR - 0.03	<LOR	0.026	0.113
	PFOA	<LOR	<LOR	<LOR	<LOR
OTH118	PFOS	<LOR - 0.03	<LOR	0.003	<LOR
	PFOS+PFHxS	<LOR - 0.05	<LOR	0.005	<LOR
	PFOA	<LOR	<LOR	<LOR	<LOR
OTH119	PFOS	<LOR - 0.08	<LOR	0.015	0.027
	PFOS+PFHxS	<LOR - 0.12	<LOR	0.021	0.031
	PFOA	<LOR - 0.03	<LOR	0.005	0.012
OTH120	PFOS	<LOR	<LOR	n/s	<LOR
	PFOS+PFHxS	<LOR	<LOR	n/s	<LOR
	PFOA	<LOR	<LOR	n/s	<LOR
POT112	PFOS	<LOR - 0.41	0.14	0.06	0.03
	PFOS+PFHxS	0.01 - 0.14	0.18	0.10	0.05
	PFOA	<LOR - 0.04	<LOR	<LOR	<LOR
POT113	PFOS	<LOR - 0.88	0.04	0.08	0.97
	PFOS+PFHxS	<LOR - 0.91	0.07	0.18	1.63
	PFOA	<LOR - 0.05	<LOR	<LOR	0.04
POT114	PFOS	<LOR - 0.11	<LOR	<LOR	0.008
	PFOS+PFHxS	<LOR - 0.18	<LOR	<LOR	0.013
	PFOA	<LOR	<LOR	<LOR	<LOR
POT120 (MW512)	PFOS	0.01 - 0.092	0.03	0.03	0.03
	PFOS+PFHxS	0.02 - 0.14	0.05	0.05	0.05
	PFOA	<LOR	<LOR	<LOR	<LOR
POT121 (MW599)	PFOS	<LOR - 0.05	0.02	0.02	0.02
	PFOS+PFHxS	<LOR - 0.08	0.03	0.04	0.04
	PFOA	<LOR	<LOR	<LOR	<LOR

Location ID	Analyte	Historical range[1] (µg/L)	OMP Events (OMR August 2024 - May 2025) (µg/L)		
		Min - Max	Dry season (August 2024 - October 2024)	Start of wet season (November 2024 - January 2025)	End of wet season (February 2025 - May 2025)
POT124	PFOS	<LOR - 0.03	<LOR	0.021	0.033
	PFOS+PFHxS	<LOR - 0.06	<LOR	0.035	0.055
	PFOA	<LOR	<LOR	<LOR	<LOR
POT125	PFOS	<LOR	<LOR	0.003	0.004
	PFOS+PFHxS	<LOR	<LOR	0.006	0.007
	PFOA	<LOR	<LOR	<LOR	<LOR
POT126	PFOS	<LOR	<LOR	0.003	<LOR
	PFOS+PFHxS	<LOR	<LOR	0.003	<LOR
	PFOA	<LOR	<LOR	<LOR	<LOR
POT127	PFOS	<LOR	<LOR	<LOR	<LOR
	PFOS+PFHxS	<LOR	<LOR	0.003	<LOR
	PFOA	<LOR	<LOR	<LOR	<LOR
POT128	PFOS	<LOR - 0.02	<LOR	0.028	<LOR
	PFOS+PFHxS	<LOR - 0.03	<LOR	0.044	<LOR
	PFOA	<LOR	<LOR	<LOR	<LOR
POT129	PFOS	<LOR - 0.03	<LOR	0.038	0.015
	PFOS+PFHxS	<LOR - 0.04	<LOR	0.061	0.025
	PFOA	<LOR	<LOR	<LOR	<LOR
POT130	PFOS	<LOR	<LOR	<LOR	<LOR
	PFOS+PFHxS	<LOR	<LOR	0.004	<LOR
	PFOA	<LOR	<LOR	<LOR	<LOR
POT131	PFOS	<LOR	<LOR	0.002	<LOR
	PFOS+PFHxS	<LOR	<LOR	0.006	<LOR
	PFOA	<LOR	<LOR	<LOR	<LOR
POT198	PFOS	<LOR	<LOR	<LOR	<LOR
	PFOS+PFHxS	<LOR	<LOR	0.003	<LOR
	PFOA	<LOR	<LOR	<LOR	<LOR
POT201	PFOS	<LOR	<LOR	<LOR	<LOR
	PFOS+PFHxS	<LOR	<LOR	0.002	<LOR
	PFOA	<LOR	<LOR	0.003	<LOR

N/A = Not applicable; n/s = not sampled.

[1] Historical data range since monitoring commenced in 2017, prior to current OMR monitoring period.

Orange shading indicates one or more results above the historical range.

Utilising low-level analysis has resulted in a more complete understanding of the PFAS plume west of Katherine River, with specific focus on OMP sample locations within Cossack where multiple private water bore users exist. PFAS has been detected in locations where it was not previously detected using the standard analysis, and require ongoing assessment using low-level analysis. It is possible, and in some cases likely, that PFAS was present during previous sampling events, but not detected due to approach of the standard laboratory level analysis performed. The Cossack sampling program conducted under the OMP will be assessed with low-level analysis in future sampling events.

A review of temporal trend graphs **G15**, **G16a, G16b** and **G16c** (**Appendix D**) indicate there is a correlation between end of wet season conditions and higher recorded PFAS concentrations, with the highest concentrations considered to be associated with wet season conditions and low concentrations related to dry season conditions. Monitoring locations OTH117, OTH119, POT112, POT113, POT124, and POT129, in particular, show significant seasonal variance corresponding to recorded precipitation totals. Additionally, OTH117, POT112, POT113, and POT129 all appear to have increasing trends when reviewing PFAS concentrations recorded between 2017 and 2025.

Boxplots showing historical and current PFOS + PFHxS concentrations are presented in **Figure 11**.

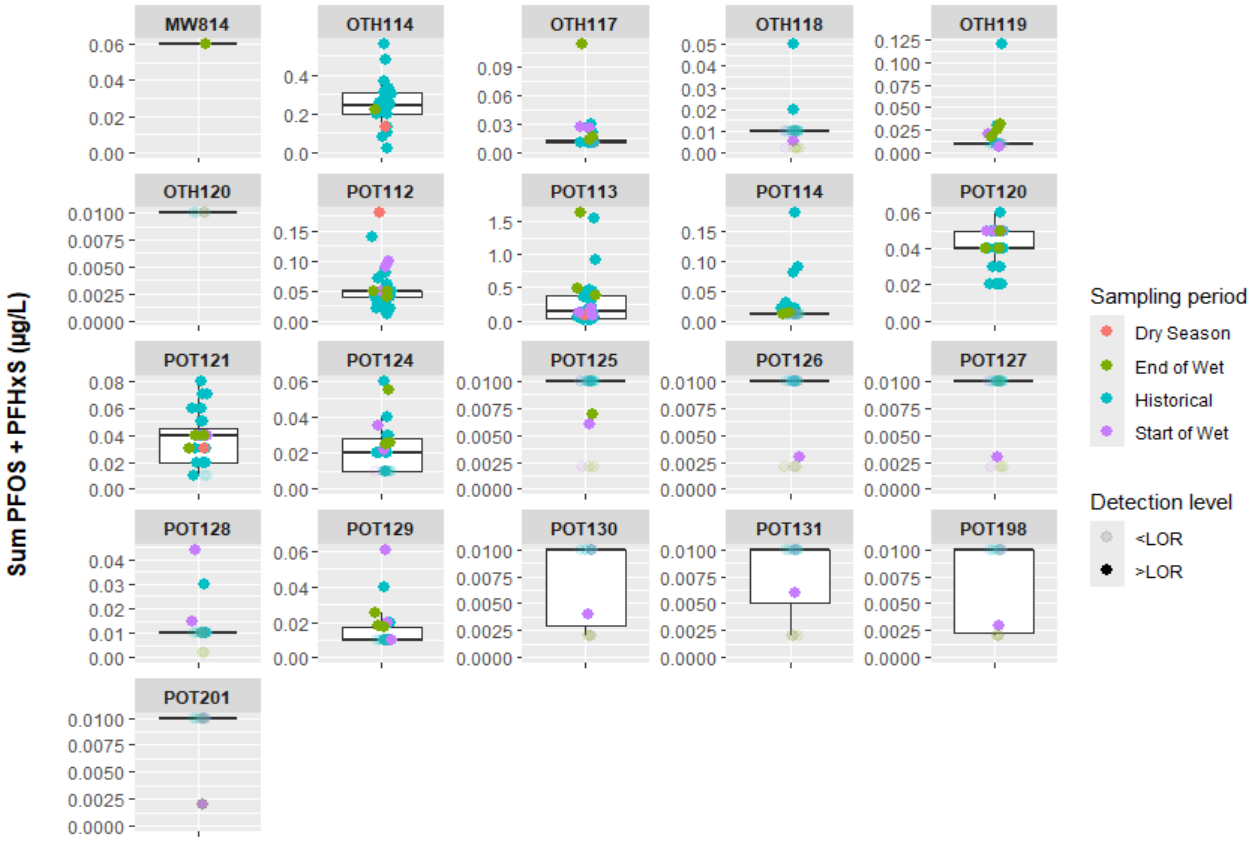

Figure 11 Boxplots showing historical and current PFOS + PFHxS concentrations at off-base west Katherine locations

Figure 11 indicates several samples as showing atypically low concentrations in the off-base west Katherine areas, and several as atypically high. Additional temporal and spatial data may be warranted to determine if these potential shifts are statistically significant, and to resolve potential seasonal differences.

8.5 Surface water results

8.5.1 Approach to surface water temporal trend analysis

The following sections detail results of surface water sampling which was carried out across two key drainage lines, Katherine River, and Tindal Creek. The Katherine Town Council Swimming Pool is part of the OMP (Defence, 2025a) scope for surface water sampling. However, the pool was closed for the duration of the sampling program for upgrades. Sampling will resume upon reopening of the pool and will be evaluated

for continued inclusion in the OMP (Defence, 2025a). The monitoring locations associated with each sampling area are presented in **Table 35**.

Table 35 Summary of surface water sampling locations area

Sampling location area	Location ID
Katherine River	SW100, SW108, SW110, SW151, SW153, SW161
Tindal Creek (on-base and off-base)	SW016, SW021, SW049, SW140, SW188, SW350
Katherine Town Council Swimming Pool	OTH008 (not sampled)

Temporal graphs for PFOA and PFOS+PFHxS concentrations in surface water are presented in **Appendix D** as summarised in **Table 36** below. The surface water temporal graphs only include locations which consistently report concentrations greater than the LOR for respective analytes. Where sample results were less than the LOR, a value at half the LOR was adopted for the graph.

Table 36 Summary of locations selected for surface water temporal plots

Sampling location area	Surface water monitoring IDs	Analyte	Graph ref
Katherine River	SW100, SW108, SW110, SW151, SW153, SW161	PFOS+PFHxS	**G17**
		PFOA	*No graph*[1]
Tindal Creek	SW016, SW021, SW049, SW140, SW188,	PFOA	**G18**
	SW016, SW021, SW049, SW140, SW188, SW350	PFOS+PFHxS	**G19**
Katherine Town Council Swimming Pool	OTH008	PFOS+PFHxS	**G20**
		PFOA	*No graph*[1]

[1] Temporal graphs for PFOA not presented due to results consistently reported below the laboratory LOR at all locations.

8.5.2 Katherine River trend analysis

Six surface water monitoring locations are positioned along the Katherine River and consist of areas used for recreation, areas of groundwater discharge as surface water, and ecological receptors. The locations are presented in **Table 35** above, historical concentrations of PFOS+PFHxS at surface water locations along Katherine River are shown graphically in **Graph G17** (**Appendix D**). PFOS, PFOS+PFHxS and PFOA results are summarised in **Table 37**. The complete data set has been presented as **Table T4** (**Appendix C**).

Table 37 Surface water summary results - Katherine River

Location ID	Analyte	Historical range[1] (µg/L)	OMP Events (OMR June 2024 - April 2025) (µg/L)		
		Min - Max	Dry season (August - October 2024)	Start of wet season (November 2024 - January 2025)	End of wet season (February - May 2025)
SW100	PFOS	<LOR - 0.16	0.16	n/s	<LOR
	PFOS+PFHxS	<LOR - 0.32	0.27	n/s	<LOR
	PFOA	<LOR	<LOR	n/s	<LOR
SW108	PFOS	<LOR - 0.25	0.12	0.02	<LOR
	PFOS+PFHxS	<LOR - 0.42	0.21	0.02	<LOR
	PFOA	<LOR - 0.0037	<LOR	<LOR	<LOR
SW110	PFOS	<LOR - 0.03	<LOR	n/s	<LOR
	PFOS+PFHxS	<LOR - 0.05	<LOR	n/s	<LOR
	PFOA	<LOR - 0.001	<LOR	n/s	<LOR

Location ID	Analyte	Historical range[1] (µg/L)	OMP Events (OMR June 2024 - April 2025) (µg/L)		
		Min - Max	Dry season (August - October 2024)	Start of wet season (November 2024 - January 2025)	End of wet season (February - May 2025)
SW151	PFOS	<LOR - 0.16	0.09	n/s	n/s
	PFOS+PFHxS	<LOR - 0.25	0.17	n/s	n/s
	PFOA	<LOR - 0.01	<LOR	n/s	n/s
SW153	PFOS	<LOR - 0.04	0.02	<LOR	0.02
	PFOS+PFHxS	<LOR - 0.05	0.03	0.02	0.04
	PFOA	<LOR	<LOR	<LOR	<LOR
SW161	PFOS	<LOR - 0.16	<LOR	n/s	<LOR
	PFOS+PFHxS	<LOR - 0.28	<LOR	n/s	<LOR
	PFOA	<LOR	<LOR	n/s	<LOR

n/s – not sampled.

[1] historical data range since monitoring commenced in 2017, prior to current OMR monitoring period.

In periods with multiple sampling events, the maximum value for the period is presented.

Boxplots showing historical and current PFOS+PFHxS concentrations are presented in **Figure 12**.

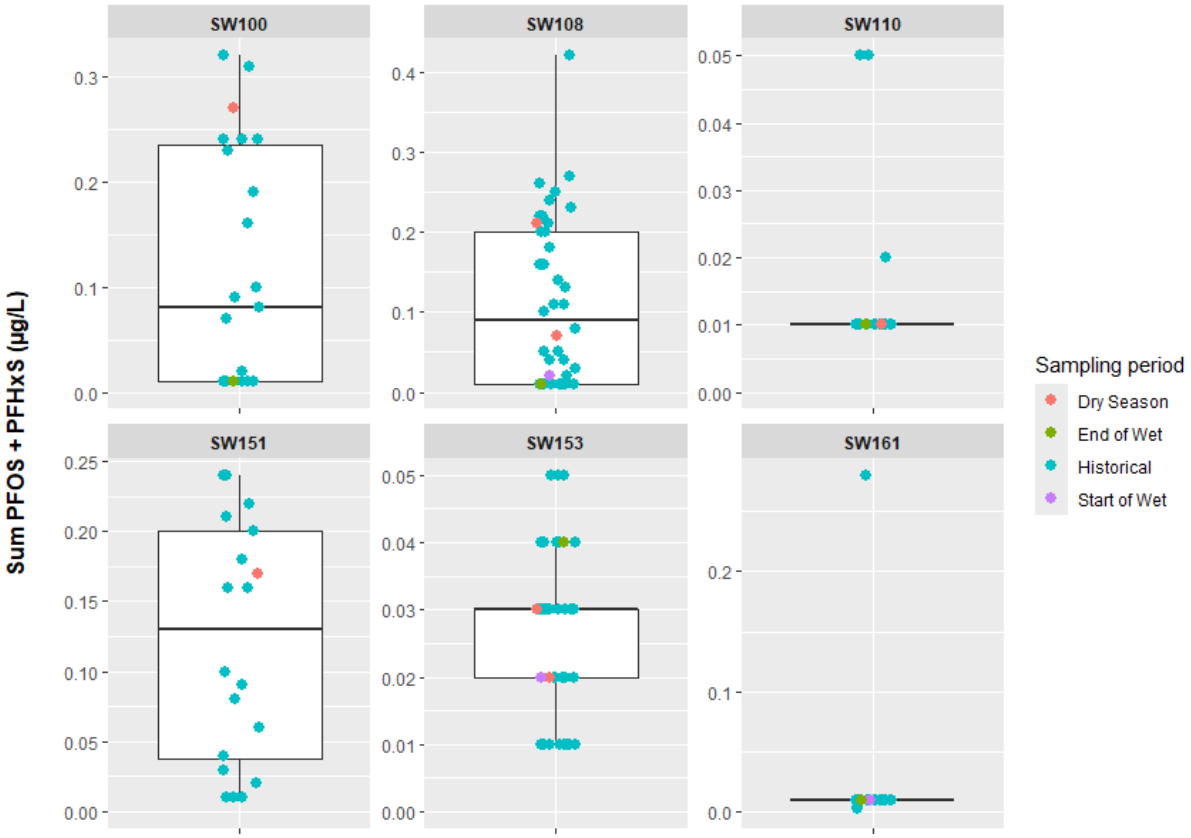

Figure 12 Boxplots showing historical and current PFOS + PFHxS concentrations at Katherine River locations

During the monitoring period, concentrations of PFOS, PFOS+PFHxS and PFOA were reported within historical ranges at all locations sampled in the Katherine River. PFOA concentrations were not reported above the laboratory LOR during the monitoring period in the Katherine River at any of the locations

sampled. PFOS and PFOS+PFHxS concentrations were not reported above the laboratory LOR during the end of wet season sampling event at all sampling locations with the exception of SW153.

Similar to conditions presented in the DSI (Coffey, 2018a), PFAS concentrations typically increase during the dry season when there is a higher percentage of contribution of groundwater to the Katherine River and decrease during the wet season conditions when dilution is a dominant factor, with more contribution from precipitation generated in upper catchment watershed. Observed PFAS concentrations in Katherine River remain similar to conditions reported during the historical investigative period.

8.5.3 Tindal Creek trend analysis

Tindal Creek is the main conduit for surface water transport of PFAS sourced from the base to Katherine River. Six surface water monitoring locations are positioned along Tindal Creek, SW016, SW021, SW049, SW140, SW188, and SW350. A total of 12 primary samples were collected from the four monitoring locations across the two monitoring events during the current monitoring period.

Historical concentrations of PFOA and PFOS+PFHxS at surface water locations along Tindal Creek are shown graphically in **Graph G18** and **G19** (**Appendix D**). PFOS, PFOS+PFHxS and PFOA results are summarised in **Table 38**, and presented in full in **Table T4** (**Appendix C**). PFOS+PFHxS results are also plotted in **Figure 13**.

Table 38 Surface water summary results - Tindal Creek

Location ID	Analyte	Historical Range[1] (µg/L)	OMP Events (OMR July 2024 - April 2025) (µg/L)	
		Min - Max	Start of wet season (November 2024 - January 2025)	End of wet season (February - April 2025)
SW016	PFOS	0.055 - 1.3	0.40	0.55
	PFOS+PFHxS	0.09 - 1.81	0.46	0.99
	PFOA	<LOR - 0.05	<LOR	0.02
SW021	PFOS	0.04 - 1.25	0.22	0.15
	PFOS+PFHxS	0.05 - 1.45	0.26	0.28
	PFOA	<LOR - 0.24	<LOR	<LOR
SW049	PFOS	0.92 - 65	0.40	15.0
	PFOS+PFHxS	0.94 - 79	0.46	20.2
	PFOA	<LOR - 2.0	<LOR	0.75
SW140	PFOS	1.14 - 16	1.37	0.80
	PFOS+PFHxS	1.39 - 19.7	1.74	0.99
	PFOA	0.13 - 2.5	0.43	0.04
SW188	PFOS	0.05 - 2.7	0.32	0.32
	PFOS+PFHxS	0.05 - 3.41	0.35	0.64
	PFOA	<LOR - 0.08	<LOR	0.02
SW350	PFOS	<LOR - 0.07	0.01	0.04
	PFOS+PFHxS	<LOR - 0.09	0.01	0.04
	PFOA	<LOR	<LOR	<LOR

n/s = not sampled.

[1] historical data range since monitoring commenced in 2017, prior to current OMR monitoring period.

Green shading indicates one or more results below the historical range.

In periods with multiple sampling events, the maximum value for the period is presented.

Boxplots showing historical and current PFOS + PFHxS concentrations are presented in **Figure 13**.

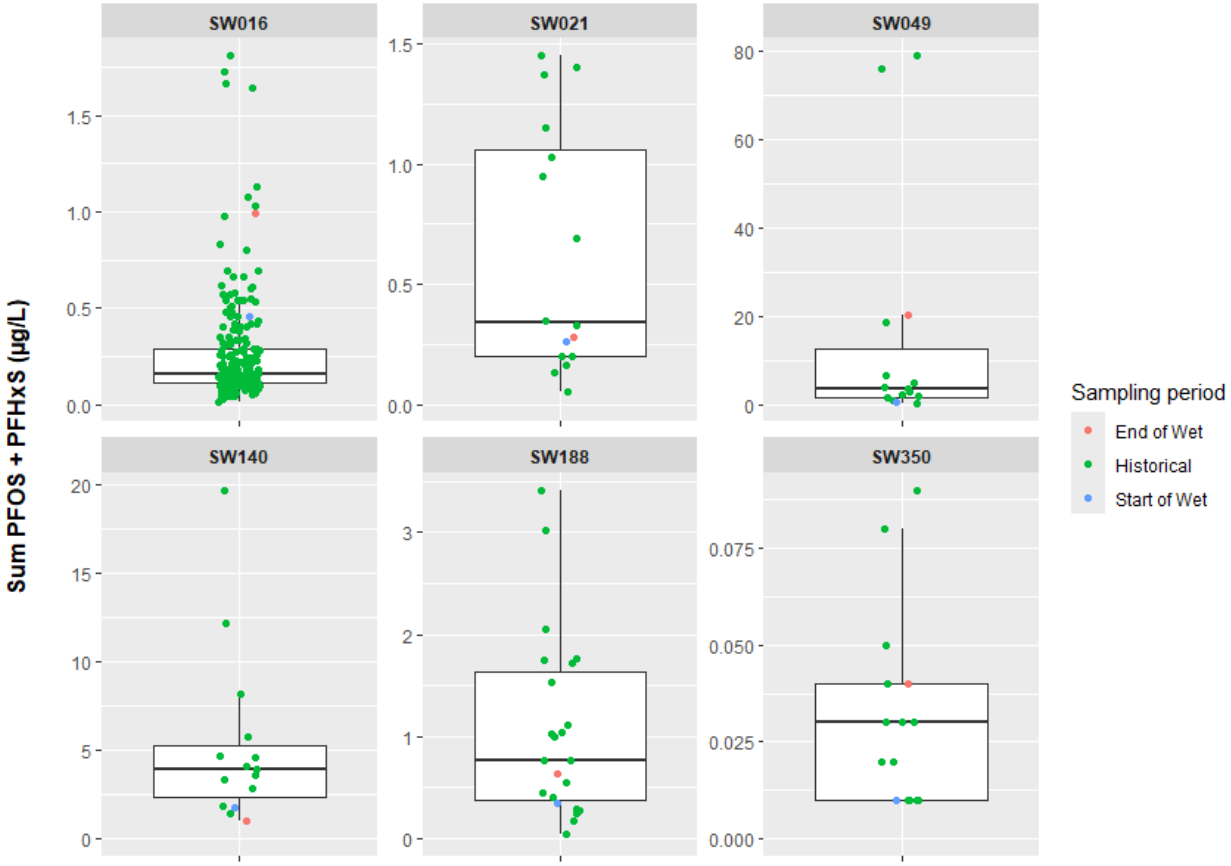

Figure 13 Boxplots showing historical and current PFOS + PFHxS concentrations at Tindal Creek locations

During the start of wet season sampling events, PFOS and PFOS+PFHxS were reported at concentrations less than historical ranges at SW049, located in the remediated FSA. Concentrations for PFOS and PFOS+PFHxS have decreased 0.52 µg/L and 0.48µg/L, respectively, when compared to the minimum historical range value. Concentrations increased between sampling rounds with concentrations of PFOS and PFOS+PFHxS increasing by an order of magnitude. It is noted that significant earth movement occurred in the vicinity of the FSA, including in the vicinity of surface water monitoring location SW049 where a significant increase in PFOS+PFHxS concentrations were recorded during the late wet season event. This concentration spike corresponded with results from other nearby and downgradient locations, which also reported higher concentrations than were recorded in the previous event. The exception being SW140, which monitors water flowing off the FSA hardstand area into the localised drainage system and is upgradient of SW049. Monitoring location SW140 reported PFOS, PFOS+PFHxS and PFOA concentrations below the historical ranges and has reported consecutive PFOS+PFHxS concentrations in all monitoring events since November 2023. As the projects associated to the nearby construction works have been completed and the area replanted, it is expected that concentrations will gradually decrease with time.

Collection of samples during the early wet season sampling event occurred after the first significant rainfall event of the wet season.

Monitoring location SW016 has recorded concentrations below the historical average since 2021. Concentrations of high mobility short chain PFAS compounds such as PFBS and Perfluoropentanoic acid (PFPeA) were detected (0.08 µg/L and 0.03 µg/L respectively), during the April 2025 sampling event. Additionally, Perfluoropentane sulfonic acid (PFPeS) and Perfluoroheptane sulfonic acid (PFHpS) have reported concentrations of 0.07 µg/L and 0.03 µg/L respectively during the April 2025 sampling event. Short chain PFAS compound Perfluoroheptanoic acid (PFHpA) has not been reported at monitoring location SW016 since April 2021.

Although the rehabilitation efforts were completed at the FTA and FSA, carbon-based materials can prefer adsorption of long-chain PFAS compounds such as PFOS and PFOA, over short-chain PFAS compounds like PFPeA and PFBS. This results in the short-chain PFAS compounds being more mobile and contacting surface water through shallow groundwater moving upward or laterally in the soil that discharges into surface water bodies.

It is noted that soil remediation works completed at the FSA and FTA are anticipated to result in consequential improvements of PFAS concentrations within surface water within Tindal Creek after a period of time.

8.5.4 Katherine Town Council swimming pool trend analysis

Monitoring location OTH008 / Katherine Town Council Swimming Pool was not conducted during the reporting period as it has been shut for repairs. Sampling of the pool will recommence once work is complete and the pool reopens to the public.

Historical concentrations of PFOS+PFHxS within the Katherine Council Swimming Pool are shown graphically in **Graph G20** (**Appendix D**). Historical PFOS+PFHxS and PFOA results are presented in **Table T4** in **Appendix C**.

8.6 Aquatic biota

Aquatic biota monitoring within Katherine River is conducted annually at the end of the dry season to monitor changes in PFAS concentrations over time and confirm ongoing relevance of data used to inform NT Health advice to the community.

Aquatic biota sampling was undertaken for analysis of specific fin-fish species, as summarised in **Table 39**, which included some targeted 'indicator' species, and where available, the collection of other relevant 'opportunistic' fin-fish. Crustaceans (cherabin) were also collected where available. Other species of fin-fish not listed in **Table 39** were not collected and returned upon catch.

Table 39 Bioaccumulation biota groups

Bio-accumulation species group	Indicator / target species	Relevant opportunistic catch
Low	Barramundi	Sleepy cod Sooty grunter
Moderate	Bony Bream	Black or blue catfish Butlers grunter Barred grunter
High	Mullet	Planiliza ordensis

The analytical data for the current monitoring period, as well as the historic biota sampling results, are included as **Table T5** in **Appendix C**. These tables present the aquatic biota concentrations gathered since 2017 and have been collected from biota sampling locations BIO078 and BIO088, which are located on the Katherine River within the vicinity of monitoring locations SW108 and SW151, respectively. Monitoring activities are summarised in the 2024 Dry Season SER (AECOM, 2025b) which is included in **Appendix B**.

Historic ranges have been based on the species groups presented in **Table 39** above. An assessment of the PFAS results from the current monitoring period against historic ranges has been completed in **Table 40** below.

Table 40 Analytical results for PFOS+PFHxS, PFOS and PFOA in aquatic biota samples

Group	Analyte	Historic range[1] (µg/L)		OMP Event (October 2024) (µg/L)		
		Min	Max	Min	Max	Average
Low bio-accumulation species	PFOS+PFHxS	0.004	1.406	0.011	0.032	0.018
	PFOS	0.0003	1.40	0.011	0.032	0.018

Group	Analyte	Historic range[1] (µg/L)		OMP Event (October 2024) (µg/L)		
		Min	Max	Min	Max	Average
	PFOA	0.0006	0.0007	<0.001	<0.001	<0.001
Moderate bio-accumulation species	PFOS+PFHxS	0.002	0.3214	0.004	0.096	0.039
	PFOS	0.002	0.32	0.004	0.094	0.038
	PFOA	ND	ND	<0.001	<0.001	<0.001
High bio-accumulation species	PFOS+PFHxS	0.001	0.7727	0.081	0.103	0.089
	PFOS	0.001	0.77	0.081	0.103	0.089
	PFOA	ND	ND	<0.001	<0.001	<0.001
Crustaceans (Cherabin)	PFOS+PFHxS	0.001	0.094	0.011	0.025	0.017
	PFOS	0.001	0.091	0.011	0.041	0.020
	PFOA	ND	ND	<0.001	<0.001	<0.001

Concentrations which exceed relevant action criteria are filled yellow.

[1] historical data range since monitoring commenced in 2017, prior to current OMR monitoring period.

ND = not determined, all results below LOR.

Fish tissue PFOS+PFHxS concentration data are also plotted as a product of sample date in **Figure 14**. For this analysis, <LOR values were replaced with LOR which represents a conservative assumption that <LOR values represent the maximum possible concentration (ANZG, 2018).

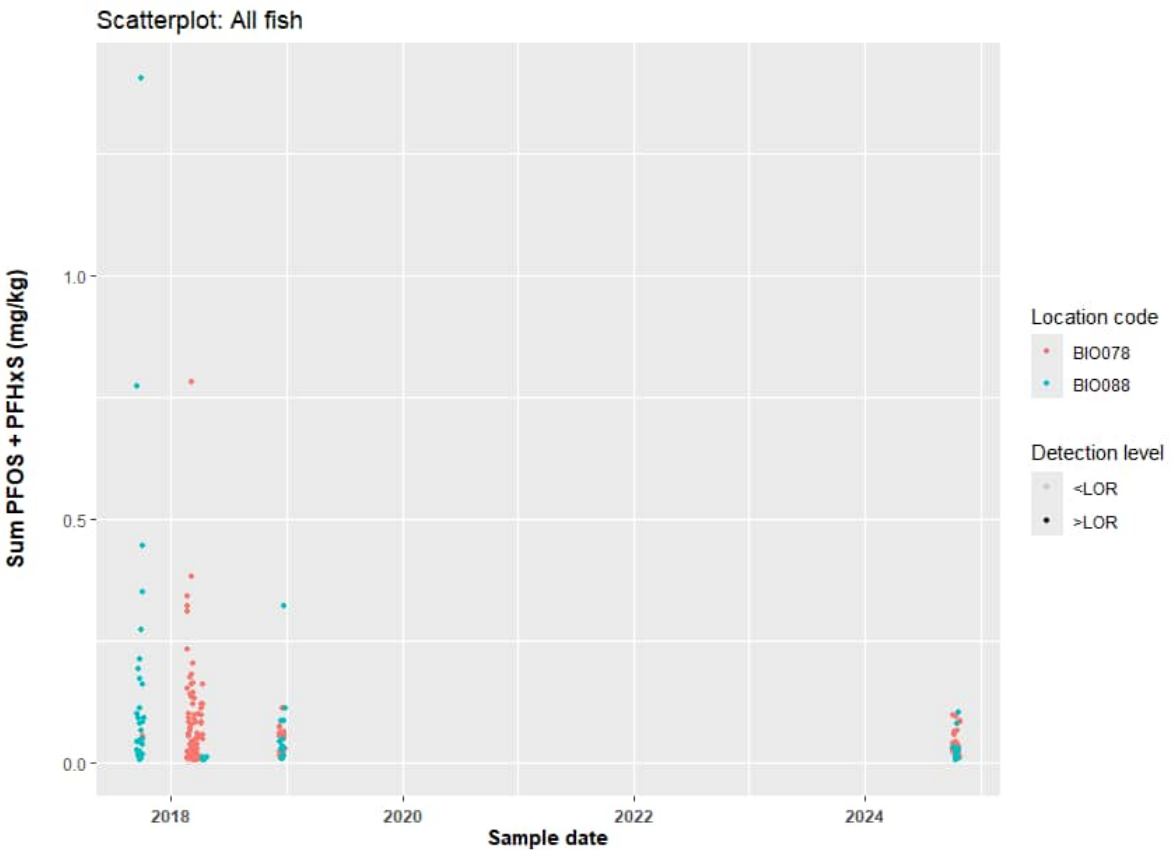

Figure 14 Scatterplot of fish (all species) tissue PFOS + PFHxS concentration data as a product of sample date

The concentrations reported from all species groups were within the historical range for PFAS during the monitoring period. From the data it is observed that maximum concentrations detected for low, moderate and high bioaccumulation species exceeded relevant consumption criteria (FSANZ, 2017) for PFOS and PFOS+PFHxS, whilst the average high bio-accumulation species result also exceeded the relevant consumption criteria (FSANZ, 2017) for PFOS and PFOS+PFHxS.

Concentrations of PFOS+PFHxS and PFOS were detected across all samples collected during the monitoring period, while PFOA did not exceed the LOR in any samples. **Figure 14** indicates a potential decrease in fish PFOS+PFHxS tissue concentrations over time, with random horizontal ‘jitter’ applied to the datapoints for visualisation purposes.

In crustaceans, concentrations of PFOS+PFHxS reported below the relevant consumption criteria (FSANZ, 2017) for both sample locations. Both results were within an order of magnitude of the historical PFAS concentration range.

The risks associated with consuming aquatic biota remain similar to conditions described in the Human Health Risk Assessment (HHRA) (Coffey, 2018c). Sampling of aquatic biota is conducted primarily to support NT Health to maintain the relevance of health advisories. The bioaccumulation of PFAS in aquatic biota will continue to be monitored through the OMP.

9.0 Discussion

9.1 Conceptual site model (CSM)

An initial CSM was developed during the investigation and human health risk assessment stages of the program (Coffey, 2018a; Coffey, 2018b; Coffey, 2018c), and summarised in the OMP (Defence, 2025a). The CSM summarises the linkages between sources, exposure pathways and receptors. Data obtained during the current monitoring period has been used to update and refine the initial CSM to incorporate any observable PFAS concentrations trends in groundwater and surface water on- and off-base. The revised drinking water guideline values (NHMRC, 2025) have required a review of the current understanding of risk associated with the CSM, which are discussed below.

Update and refinement of the CSM comprises:

- Source mass discharge reduction at the FTA and FSA due to the recent completion of soil remediation. It is anticipated that consequential improvements in surface water and groundwater will transpire in the medium to long-term (i.e. reduced mass discharge from the source areas).
- Seasonal influence on the extent and magnitude of PFAS mass in groundwater on- and off-base. The soil remedial activities at the FTA and FSA (PFAS mass removal, adding PAC to the remaining soil to increase its PFAS adsorption capacity, and capping of the treated soil) have reduced the potential for PFAS to migrate (i) from the dry season vadose zone to groundwater when the water table rises during the wet season and (ii) to surface water via rainfall runoff.
- Receptor exposure: On base exposure to PFAS via physical contact with soil has been reduced due to the completion of soil remediation at both FSA and FTA.
- Receptor exposure: Encroachment of the PFAS plume, at concentrations that intermittently exceed drinking water criteria, but now exceed the revised drinking water criteria, within the Cossack and potentially nearby in areas further south (both west and east of Katherine River). These areas are currently designated Management Zone 5.
- Receptor exposure: Encroachment of the PFAS plume, at concentrations that exceed drinking water criteria, to the north of the currently identified plume extent. Identified in the first-time detections at northern sentinel well MW814 and MW815. This area has previously been designated as Management Zone 5. As such revision of receptor exposure, via drinking of groundwater, is warranted.

While the CSM described in the DSI (Coffey, 2018a) adequately describes the sources, pathways and receptors within the Management Area, it is identified that an expansion of the PFAS plume to the west and north of the Management Area may be occurring.

New historical maximums have been detected off-base within this monitoring period, though typically within the same order of magnitude. These increases are likely the result of seasonal variations and likely not representative of an overall increasing trend, which is to be monitored through the ongoing sampling events under the OMP. Additionally, low-level PFAS testing for select locations along the monitored PFAS plume edge have contributed to the increase of new locations reported with PFAS detections.

Reported PFAS concentrations in groundwater at the two primary source areas (FTA and FSA) have fluctuated seasonally and likely as a result of the remedial works at these sites. Results from the OMP (Defence, 2025a) program has thus far been inconclusive, however, some locations closest to the remediation area have reported PFAS concentrations below the historical average since September 2023.

PFAS concentrations in surface water locations both on- and off-base remain relatively stable, however, recorded PFAS concentrations at the base boundary at SW016 have been, and continue to be, below the historical average since 2021, with corresponding concentrations of high mobility short chain PFAS compounds reporting below the LOR since 2021. A recent increase in PFAS concentrations was observed in on-base drainages and within Tindal Creek during the 2025 late wet season sampling event, which may be a result of recent earthworks activities that have exposed soils between the FSA and the runway area. Despite this observed increase, PFAS concentrations recorded at SW016 at the base boundary remain below the historical average. There has also been a notable decrease in PFAS concentrations recorded at SW140, which receives water from the FSA hardstand area, which is a known source of PFAS in surface water on-

base. Ongoing monitoring of PFAS within Tindal Creek will determine the effectiveness of soil remediation works at the FSA and FTA result, if a continued decrease is reported over time.

Within the Katherine River, concentrations were reported below the recreational criteria during the monitoring period. A strong seasonal trend has been observed with PFAS concentrations typically lower during the wet season due to stormwater contributing more to river flow. The location, known as Donkey Camp (SW161), where water is extracted from Katherine River to supply the local town water supply remains below the drinking water criteria.

The HHRA (Coffey, 2018c) identified specific Management Zones within the PFAS Management Area, intended to distinguish between water uses, and further characterised by PFAS concentrations. With the adoption of the revised drinking water guideline values (NHMRC, 2025), the Management Zones no longer reflect the potential risk exposure to receptors of drinking water, particularly to receptors in Zone 2, which are presented in **Figure F1** (**Appendix A**) and summarised in **Section 2.2**.

9.2 Risk profile

9.2.1 Risk assessment summary

The HHRA (Coffey, 2018c) and the Ecological Risk Assessment (ERA) (Coffey, 2018d) assessed the potential on- and off-base human health and environmental risks resulting from exposure to base-derived PFAS in soil, groundwater and / or surface water.

9.2.2 Human health risk assessment

The exposure pathways where potential risks were identified as elevated in the HHRA (Coffey, 2018c) included:

- Consumers of PFAS impacted groundwater or river water as a primary drinking water source
- Consumers of home-grown produce (eggs and meat) irrigated using PFAS impacted groundwater
- Consumption of aquatic biota captured from the Tindal Creek or Katherine River (downstream of Knotts Crossing)
- Base construction or maintenance workers with direct contact to PFAS impacted soil and effluent.

The current data set collected under the OMP does not indicate that there is a change in the identified HHRA exposure pathways described above with exception to the soil remediated areas at the FSA and FTA, where exposure to construction and maintenance works is reduced.

While the overall mechanism of PFAS transport from on-base source areas to downgradient receptors has not changed since the development of the HHRA (Coffey, 2018c) and ERA (Coffey, 2018d), it is expected that soil remediation that has occurred at the FSA and FTA will reduce PFAS discharge from the base, subsequently reducing risk downgradient. Conversely, the adoption of revised drinking water guideline values (NHMRC, 2025) and use of low-level laboratory analysis has identified additional areas, particularly in Cossack, where risks are potentially increased. Perceived risks in downgradient locations are a result of lower guideline values that capture additional area at lower concentrations than what was previously considered in the original risk HHRA (Coffey, 2018c), not the result of additional PFAS in the area or expansion of the PFAS plume.

9.2.3 Ecological risk assessment

The exposure pathways where potential risks were identified as elevated in the ERA (Coffey, 2018c) included:

- Aquatic invertebrates, amphibians and fish in PFAS impacted water. Plants in direct contact with soils
- Birds and mammals that eat fish from Tindal Creek
- Birds and mammals that eat plants, invertebrates and reptiles.

The current data set collected under the OMP does not indicate that there is a change in the identified ERA exposure pathways described above.

9.2.4 Risk profile evaluation

The key findings of the HHRA and ERA are supported by the data collected as part of the OMP over the monitoring period. However, there have been some changes observed in PFAS concentrations in groundwater and surface water within and outside the Management Area. These changes are attributed to increased data collection revealing seasonal fluctuations, potential western and northern migration of PFAS in groundwater, and the effects of soil remediation in the two key source areas (FSA and FTA).

Exposure point concentrations relevant to human and ecological receptors have been directly assessed through the DSI (Coffey, 2018a) and key community exposure points continue to be monitored, including:

- The Katherine Town Council Swimming Pool (OTH008), which has remained less than the recreational guidance values since 2018
  - It is noted the swimming pool is currently being renovated and PFAS conditions within the swimming pool water may change depending on the nature of the renovations and if localised bore water is used as the pool's water source
- The Katherine Hot Springs (SW153), which has remained less than the recreational guidance values since 2018
- Aquatic biota (fish and cherabin) in Katherine River, which was identified as a potential exposure risk in the HHRA (Coffey, 2018c) and continues to be monitored for changes in risk level
- Groundwater bores in Cossack on the western side of Katherine River, close to the river, where concentrations exceed the adopted drinking water criteria.

Preliminary risk profile assessments are provided for groundwater, surface water, aquatic biota, and the ecosystem within the Management Area in the sub-sections below.

9.2.4.1 Groundwater

Groundwater concentrations east of the Katherine River are consistent with the risk profile as developed in the HHRA (Coffey, 2018c), which related to unacceptable exposure to concentrations consistently above the drinking water criteria.

To the west of the Katherine River, instances have been identified where PFAS concentrations in individual wells have reported first time concentrations above the drinking water criteria, as well as first-time detects using the low-level analysis, with PFAS impacts within groundwater possibly migrating west of the extent of the current Management Area. It is recognised that:

- New detections reported for PFOS+PFHxS are the result of fluctuations in concentrations but within historical ranges or note to require ongoing monitoring to assess for potential trends
- Monitoring locations OTH117, POT112, POT113, POT124, POT128 and POT129 reported new maximum concentrations of PFOS+PFHxS during the reporting period, suggesting PFAS groundwater encroachment in Cossack may be seasonally driven
- New exceedances of the drinking water criteria were reported for OTH117 and POT128 during the February Private Bore sampling event
- First-time detections of PFOS+PFHxS were reported for POT125, POT126, POT127, POT130, POT131, POT198 and POT201 during the February Private Bore sampling event.

With adoption of the revised ADWG and low-level PFAS testing conducted west of the Katherine River, it is identified that the risk profile in Cossack is changing, ongoing monitoring under the OMP will continue to monitor and assess the risk profile, and that the current understanding of the risk profile does not align with the current Management Area description. Defence maintains a precautionary approach to support the community with programs to provide alterative water supplies to those impacted.

9.2.4.2 Surface water

Despite fluctuations of PFAS reported in surface water, concentrations are similar to previous monitoring for locations at Katherine River and the Katherine Hot Springs, likely due to ongoing PFAS contributions from groundwater. Remediation efforts are not expected to have a substantial change near Katherine River for several years, however sampling data recorded in Tindal Creek (SW016) suggest that PFAS leaving the base via surface water has reduced as a result of soil remediation works completed at the FTA and FSA.

All surface water locations were reported below the recreational water criteria during the monitoring events completed in the monitoring period with exception to monitoring location SW049, which is within the drainage system where civil works were occurring between the FSA and the runway area. As concentrations downgradient at SW016 showed no significant change from the historical concentration range, there is no apparent change to the risk profile associated with PFAS concentrations present in surface water within the Management Area.

9.2.4.3 Aquatic biota

PFAS concentrations in aquatic biota from the Katherine River were similar to previous results, with a stable to decreasing trend observed over the sampling events for high to low-bioaccumulating species groups (refer **Section 8.6**). Based on consistency of the recent OMP results with historical concentrations, there is no apparent change to the risk profile associated with PFAS concentrations present in aquatic biota.

9.2.4.4 Ecological risks

The conditions described within the ERA (Coffey, 2018d) remain accurate and the risks to organisms within the Management Area ecosystems remain unchanged at this time.

9.3 Assessment of current OMP

Based on the above review of the data collected during the monitoring period, there are no significant changes to the understanding of the nature, extent or risks associated with PFAS at the base or within the Management Area except for the following:

- Changes in plume, concentrations, and potential risk within Cossack
- Incomplete understanding of plume extent and potential risks along the northern plume boundary east of Katherine River.

The need for monitoring of additional media has not been identified at this time. It is also understood that no significant OMP updates are required arising from stakeholder engagement or changes in land use.

Based on an evaluation of the data presented in this report the following OMP (Defence, 2025a) triggers were met:

- Locations POT112, POT113, POT121, OTH117, OTH119 had concentrations above the drinking water criteria during one or more monitoring event during the monitoring year within Management Zone 5 (PFOS+PFHxS concentrations below 7 µg/L)
- New exceedances of the drinking water criteria at POT121 and OTH119
- PFAS detected in sentinel wells MW815 and MW136.

As a result of these specific triggers, and adoption of the revised ADWG for applicable drinking water receptors, a review of the OMP is required. The OMP (Defence, 2025a) indicates that if additional properties report detectable concentrations of PFAS, the monitoring network should be expanded as required to characterise the risk from PFAS plume in the area. Additionally, the OMP requires review to adequately address the revised ADWG (NHMRC, 2025) with lower concentration limits and the use of low-level laboratory PFAS testing for ongoing monitoring that risks are being adequately managed.

Testing was performed at additional groundwater monitoring wells within the Cossack area during the wet season in 2024-2025 to determine if there is a change in risk outside the current Management Area, within Cossack. It is noted that 4 of 6 groundwater monitoring wells in February 2025 and 3 of 6 locations in March 2025 were reported above the revised ADWG, and requires update in the OMP.

In addition, the suitability of the monitoring well network along the northern boundary of the Management Area, in particular north of MW815, is being evaluated to determine if additional monitoring locations should be included to delineate the plume.

10.0 Conclusion

Overview of CSM

The monitoring conducted over the current period is considered to have met the objectives of the SAQP and the overall OMP (Defence, 2021b). The CSM was reviewed in light of monitoring data collected during the reporting period (June 2024 - May 2025). Updates to the CSM are required to reflect changes in previously identified sources, pathways, and/or receptors at the base or within the Management Area, as described in the PMAP (Defence, 2025b) The findings of the interpretive analysis conducted for the monitoring period are considered consistent with the risk profile for the Management Area. In summary, CSM changes were identified including, but not limited to:

- Westerly migration and potential expansion of PFAS groundwater plume, particularly during and immediately following wet seasons.
- Increased potential receptor exposure in areas not previously observed in Cossack and along the northern plume boundary.
- Reductions in PFAS concentrations have been observed at the base boundary within Tindal Creek, corresponding with soil remediation actions at the FSA and FTA.
- Reductions in risk to on-base construction and maintenance workers at the FSA and FTA resulting from soil remediation and site controls.
- The northern plume monitoring network may not completely capture the northern plume boundary. Additional monitoring locations included in a revised OMP would improve northern plume boundary tracking within the Management Area.
- Adoption of the revised drinking water guideline values (NHMRC, 2025) has expanded the relevant plume boundary to the west, potentially changing the risk at additional properties within Cossack.

Groundwater analysis

Limited seasonal data collected over the monitoring period indicated that the PFAS groundwater plume is most likely seasonally influenced. Down-gradient locations report higher PFAS concentrations during the wet season within the leading edge of the plume within Cossack.

- PFAS-impacted groundwater perennially discharges into Katherine River. The concentrations of PFAS recorded within the Katherine River during the dry season were higher than during wet season, when surface water runoff is a greater contributor to river flow.
- The FSA and FTA have both undergone or are undergoing remediation works (soils / infrastructure). Due to the apparent seasonal variation in PFAS concentrations, further monitoring is required to determine the influence of the works in reducing surface water and groundwater concentrations at, and downgradient of the key source areas.

Significant improvements to groundwater conditions downgradient of the on-base source areas, as a result of the operation of two WTPs, have not been clearly observed to date. New extraction wellfields are being developed for potential use and optimisation of the existing WTPs.

Surface water analysis

- No changes in PFAS conditions have been observed in the Katherine River or Katherine Hot Springs over the monitoring period.
- Concentrations of PFAS in Tindal Creek, while slightly higher than the previous reporting period, still remain below the historical average.

Aquatic biota analysis

- Monitoring results from collected aquatic biota during the monitoring period remains similar to conditions recorded during the investigation stages. Further monitoring will continue to support NT Health to maintain consumption of aquatic biota advisory notices up to date / current.

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Appendix A

Figures

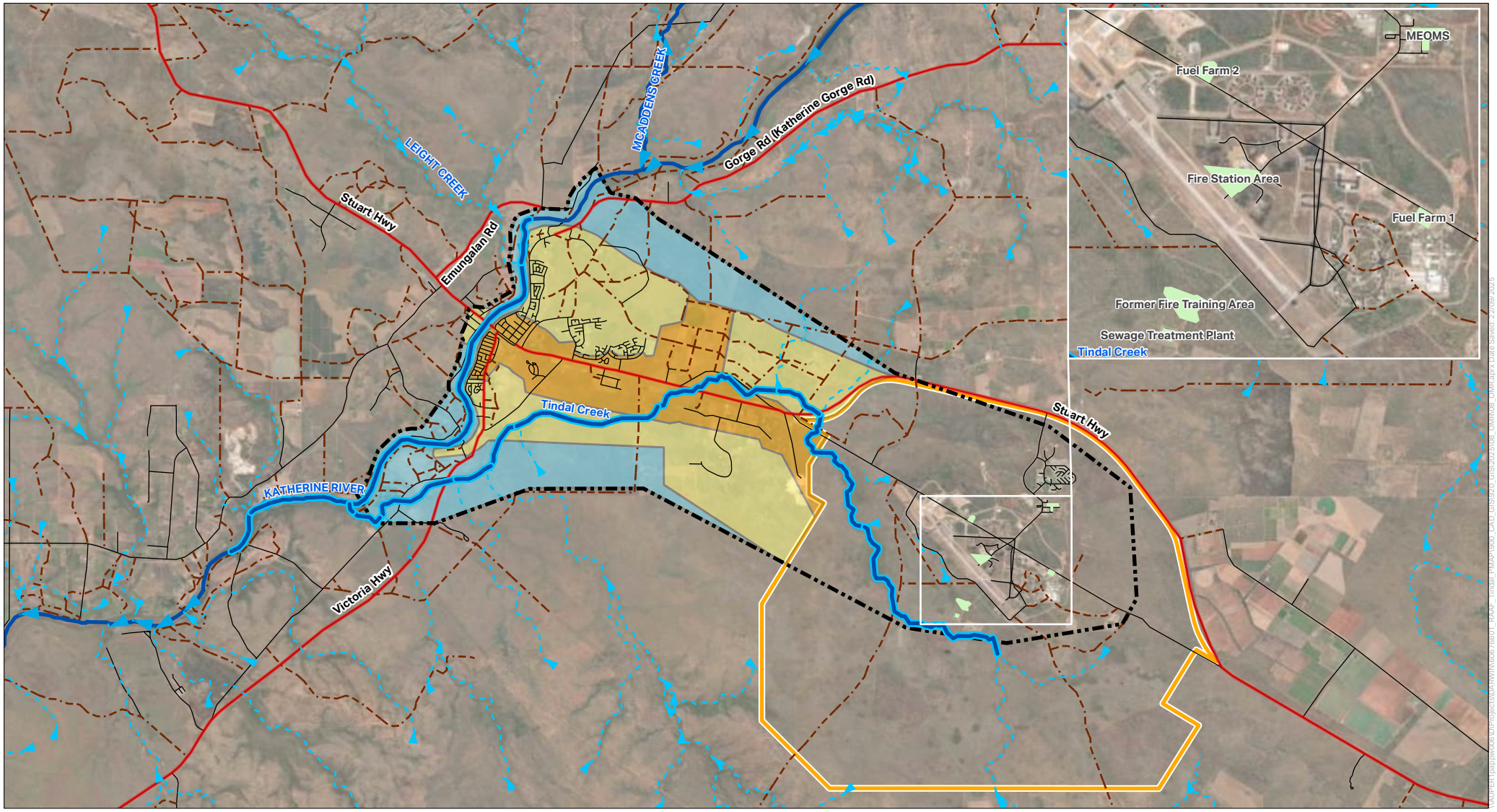

FIGURE F1: PFAS MANAGEMENT AREA

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage
- Zone 1 Groundwater > Recreational Water Criteria
- Zone 2 Groundwater > Drinking Water Criteria
- Zone 5 Groundwater < Criteria
- Source Areas

Note:

Zone 4 - Treated Town Water Supply - Not shown

N

0 1 2 3 km

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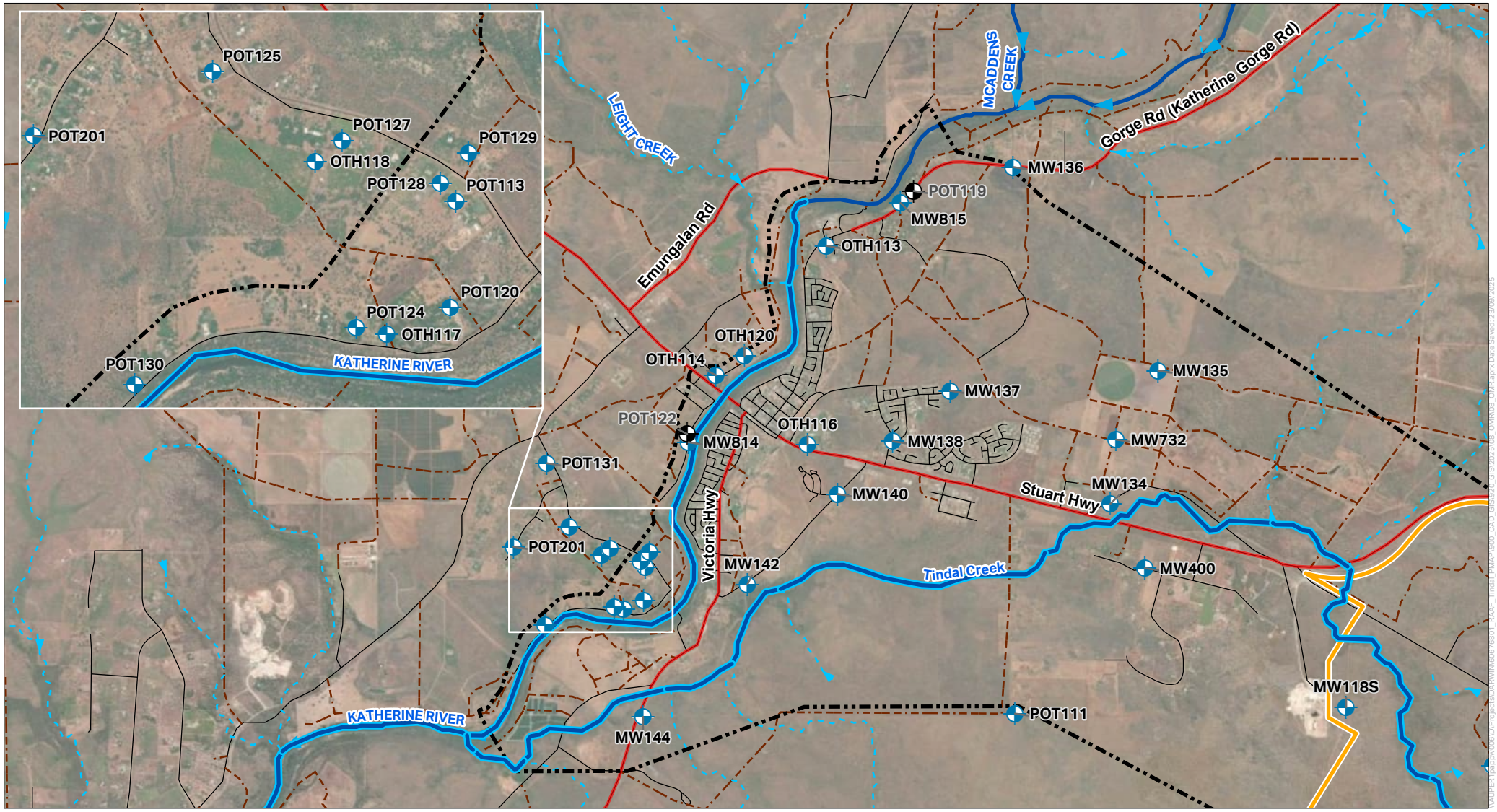

FIGURE F2: OFF-BASE GROUNDWATER SAMPLE LOCATIONS

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage
- Groundwater Monitoring Location
- Monitoring Location Removed From Program

Note:

- OTH119, POT112, POT114, POT126 and POT198 not shown for privacy reasons.
- MW814 has replaced POT119 due to access restrictions
- MW815 has replaced POT122 due to access restrictions

N

0 1 2 km

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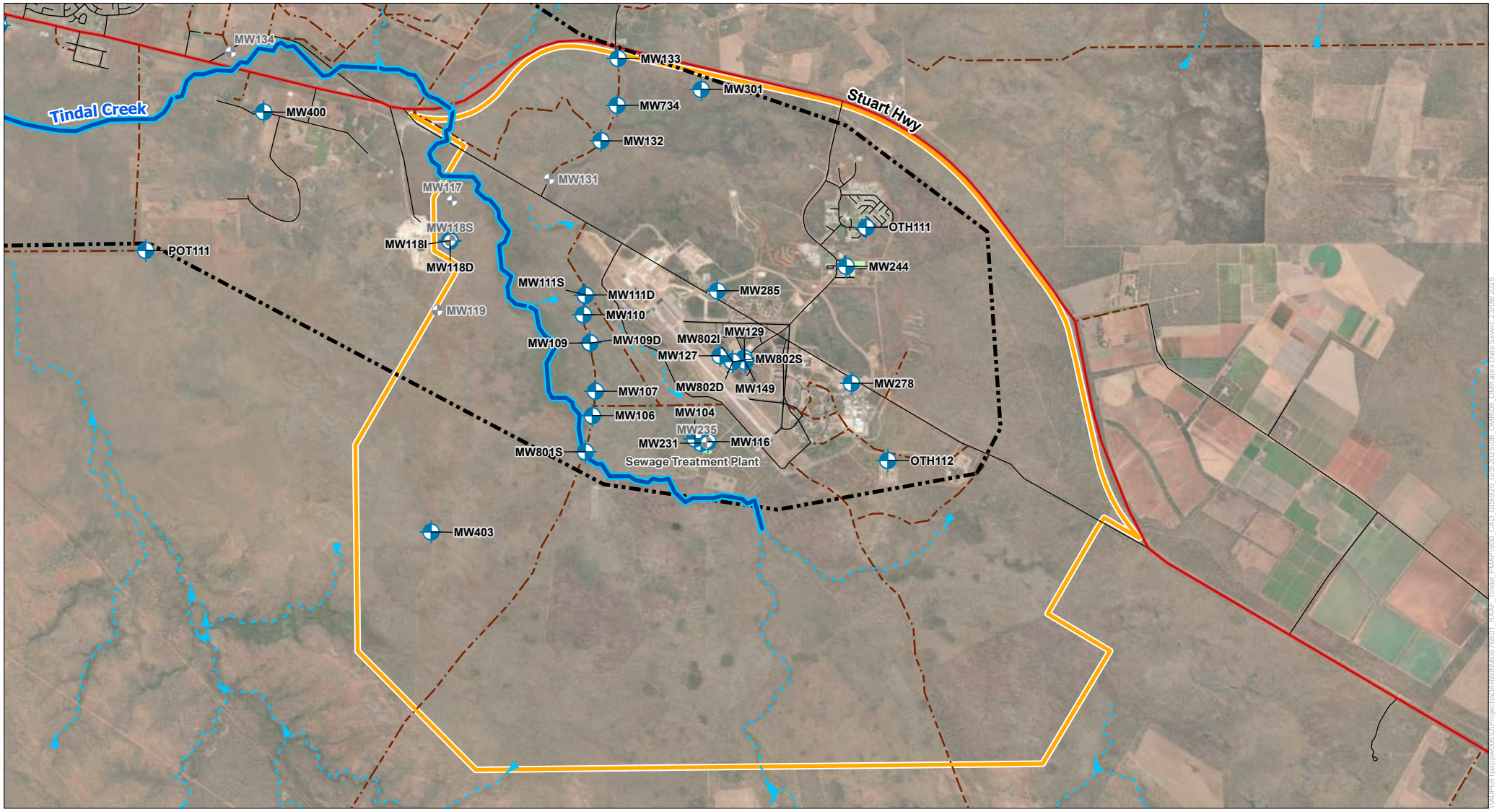

FIGURE F3: ON AND OFF-BASE GROUNDWATER SAMPLE LOCATIONS

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Drainage
- Groundwater Monitoring Location
- Groundwater Monitoring Location (Not Sampled)
- Source Areas

N

0 1 2 km

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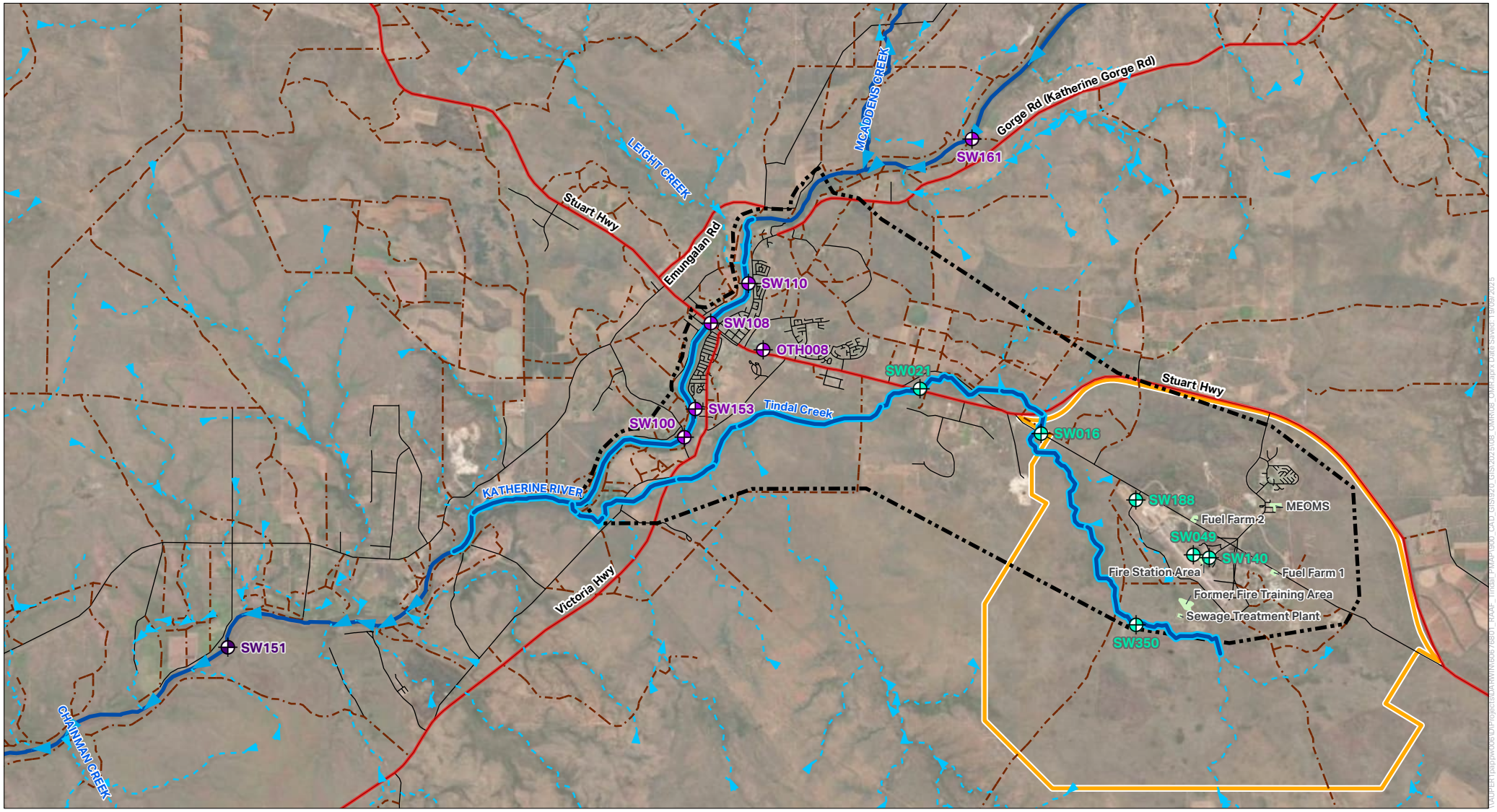

FIGURE F4: SURFACE WATER SAMPLING LOCATIONS

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage
- Biannual Surface Water Monitoring Locations
- Twice in Wet Season Surface Water Monitoring Locations
- Annual Surface Water Monitoring Location
- Source Areas

Note:

•SW151 is collected at the same time as biota sample collection

N

0 1 2 3 km

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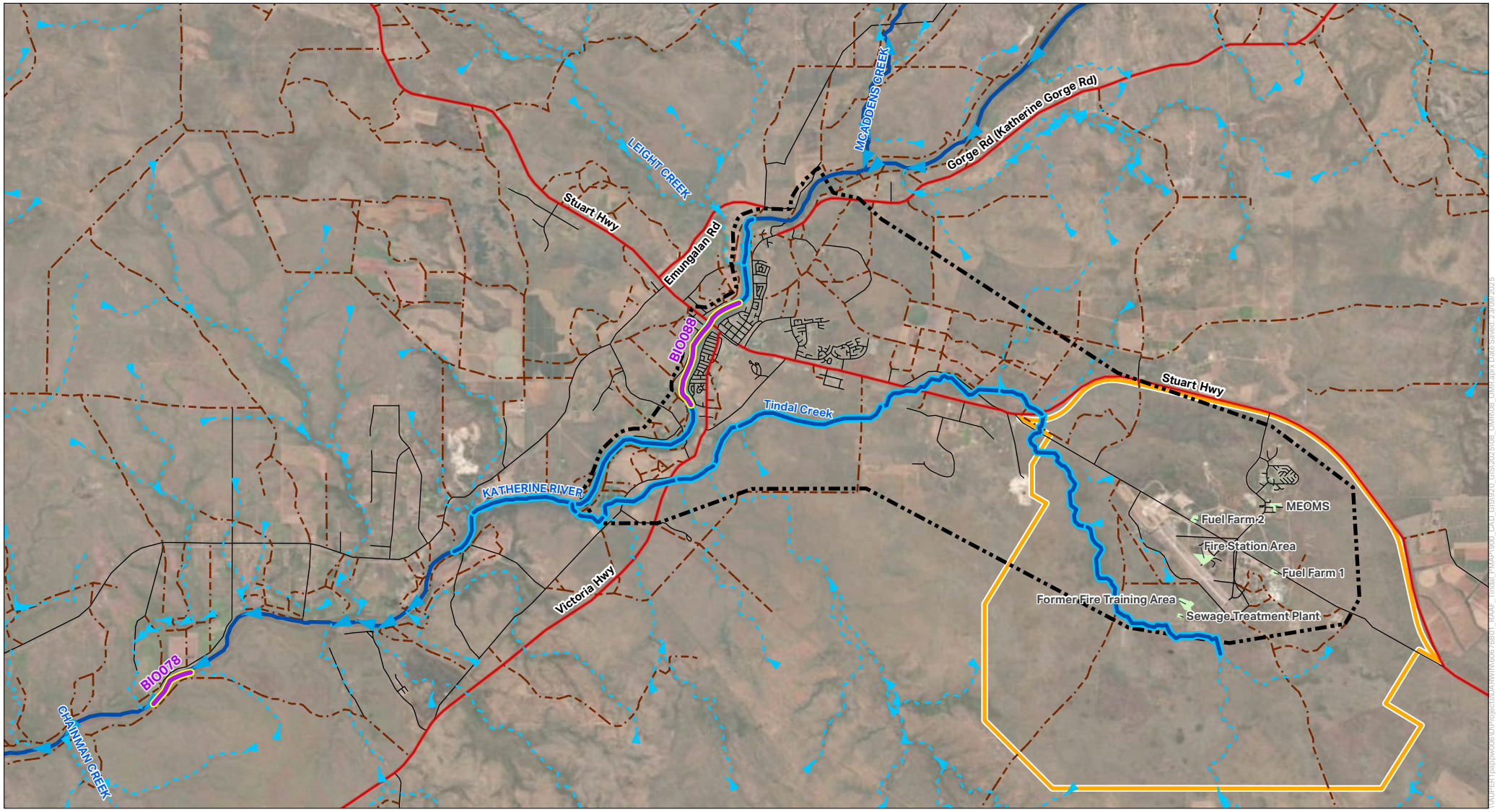

FIGURE F5: BIOTA SAMPLING LOCATIONS

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage
- Biota Sampling Area
- Source Areas

0 1 2 3 km

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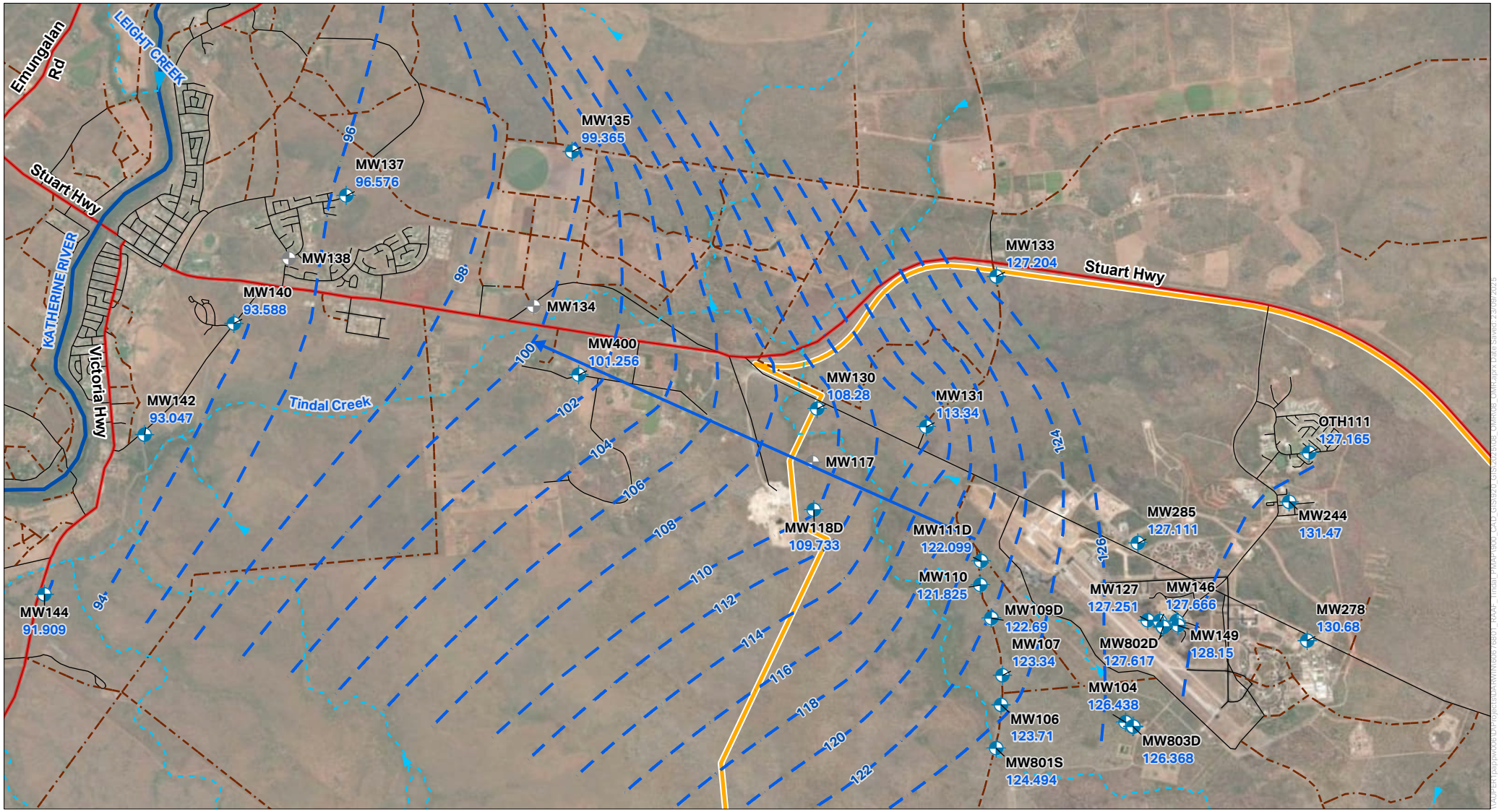

FIGURE F6.1: INFERRED GROUNDWATER FLOW AND ELEVATION CONTOURS OCTOBER 2024

Legend

- RAAF Base Tindal
- Highway
- Road
- Track
- Katherine River
- Drainage
- Annual Groundwater Locations
- Not Sampled Due To Being Inaccessible, Dry or Blocked
- Inferred Groundwater Level (mAHD)
- Inferred Groundwater Direction

N

0 1 2 km

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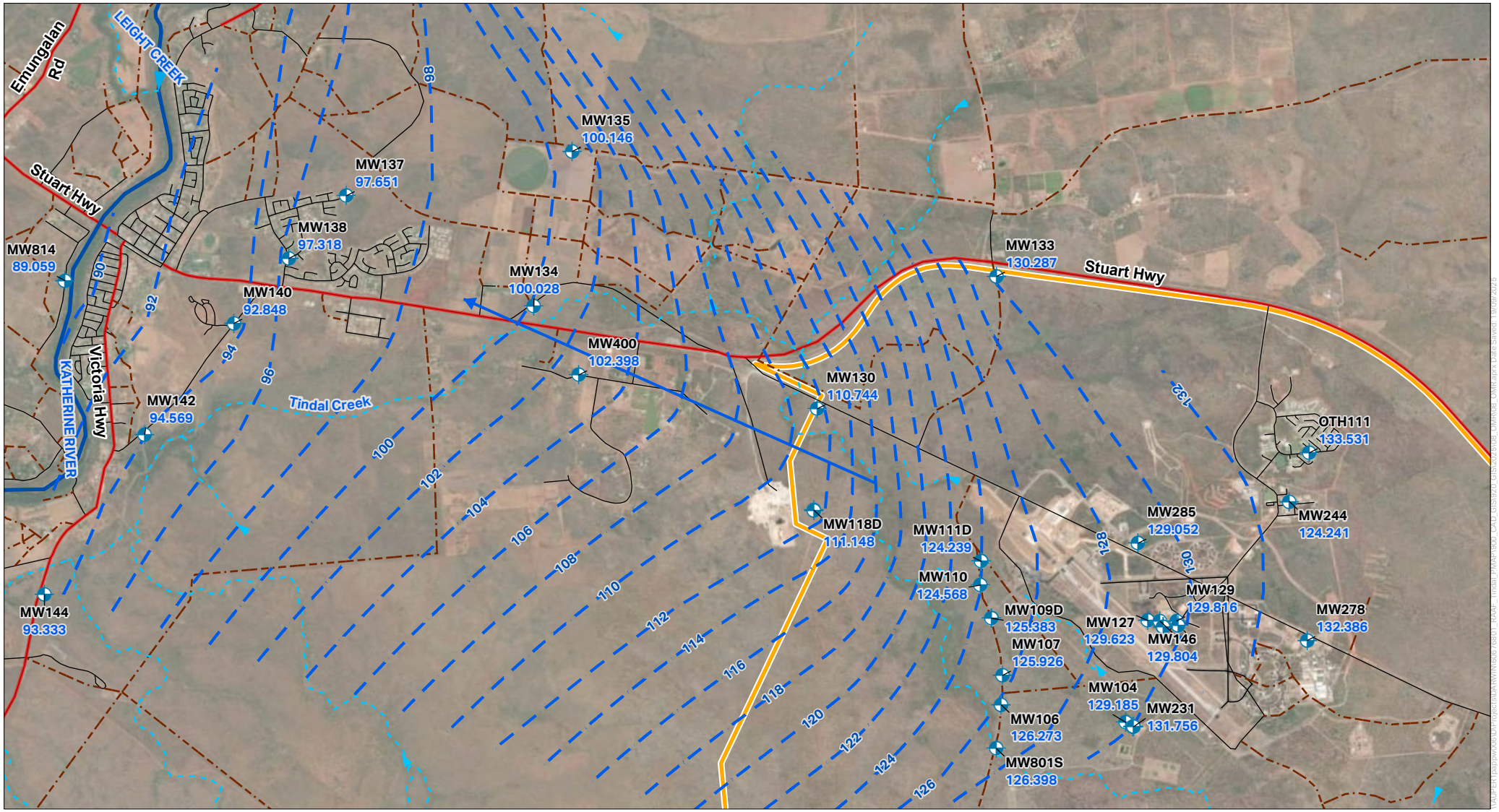

FIGURE F6.2: INFERRED GROUNDWATER FLOW AND ELEVATION CONTOURS APRIL - MAY 2025

Legend

- RAAF Base Tindal
- Highway
- Road
- Track
- Katherine River
- Drainage
- Biannual Groundwater Locations
- Inferred Groundwater Level (mAHD)
- Inferred Groundwater Direction

N

0 1 2 km

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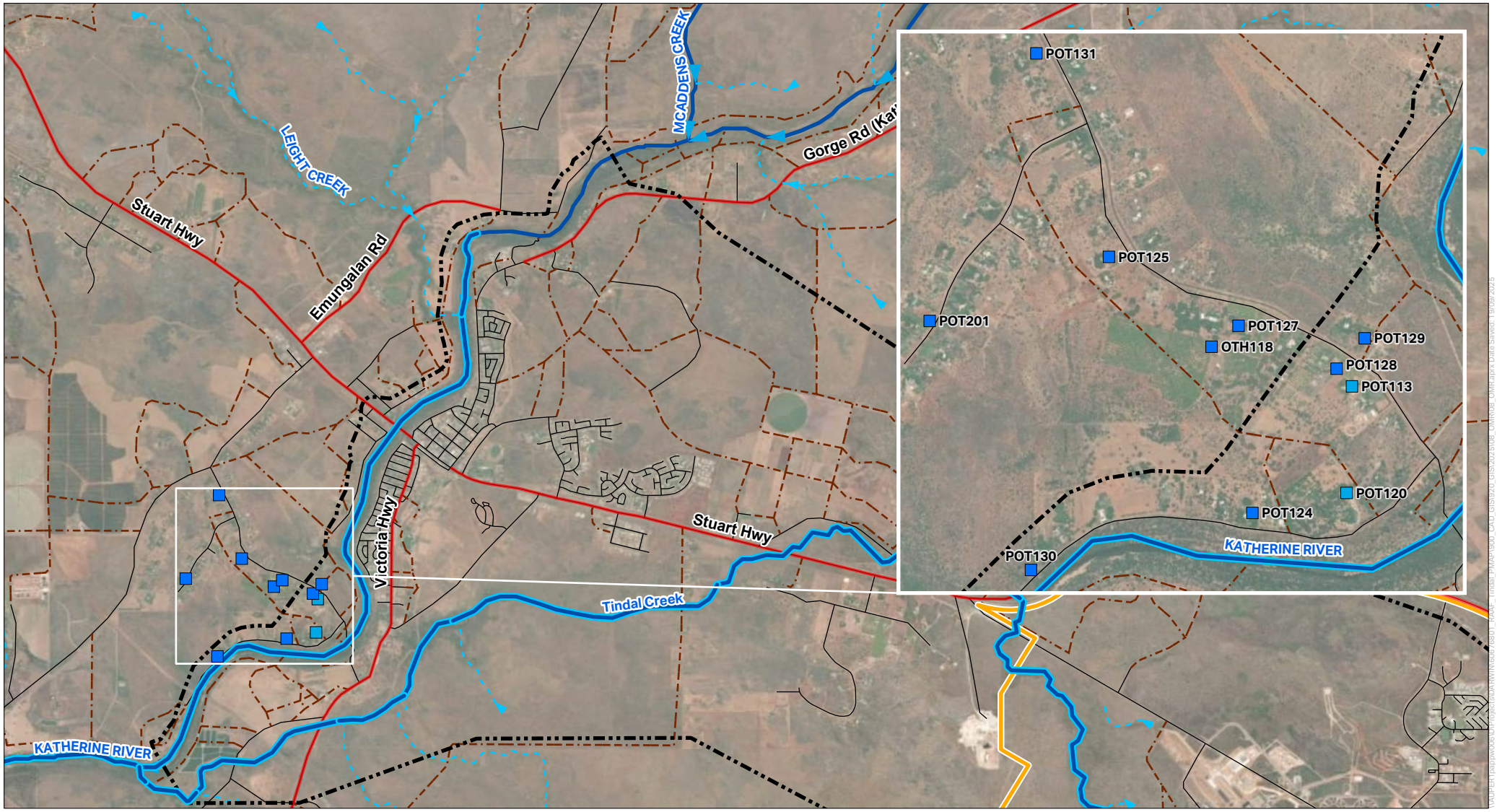

FIGURE F7.1: SUM OF PFOS + PFHxS CONCENTRATIONS FOR PRIVATE PROPERTY GROUNDWATER LOCATIONS OCTOBER 2024 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOS + PFHxS (µg/L)

- > 50
- 10 - 50
- 2 - 10
- 0.07 - 2
- 0.01 - 0.07
- < 0.01

Note:

•OTH119, POT112, POT114, POT126, POT198 not shown for privacy reasons.

N

0 1 2 km

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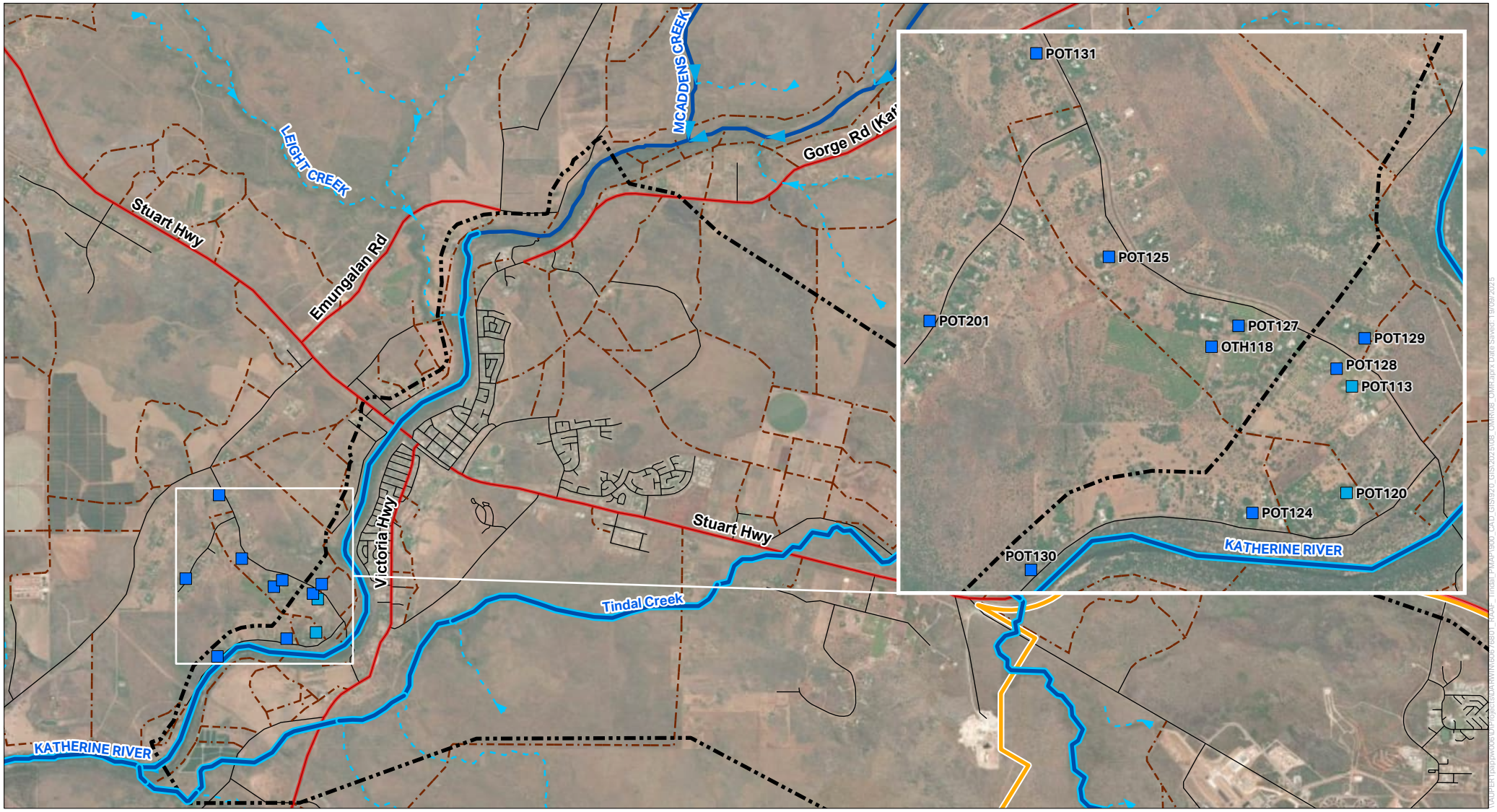

FIGURE F7.2: PFOA CONCENTRATIONS FOR PRIVATE PROPERTY GROUNDWATER LOCATIONS OCTOBER 2024 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOA (µg/L)

- > 19
- 10 - 19
- 0.56 - 10
- 0.01 - 0.56
- <0.01

Note:

•OTH119, POT112, POT114, POT126, POT198 not shown for privacy reasons.

N

0 1 2 km

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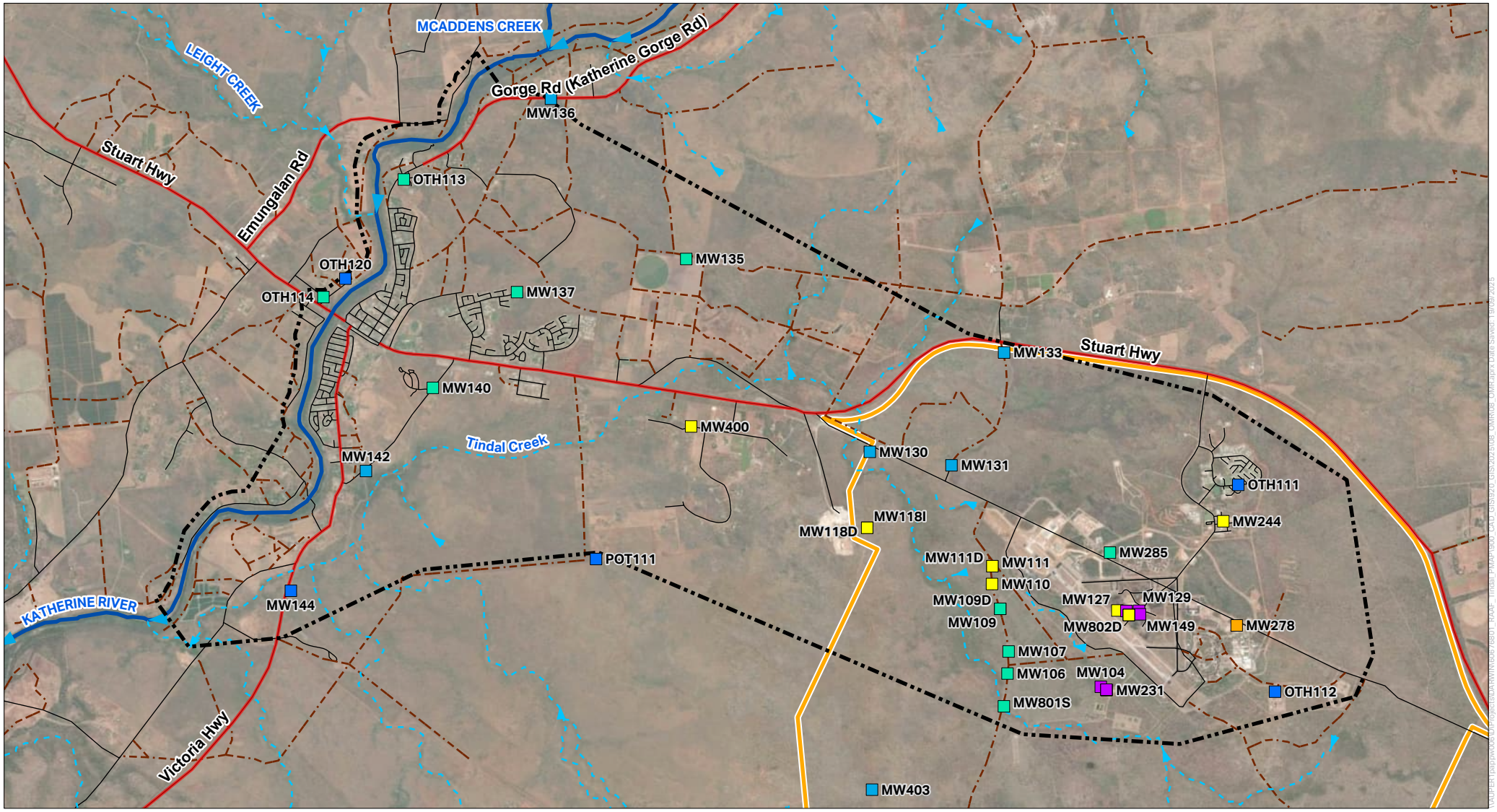

FIGURE F7.3: SUM OF PFOS + PFHxS CONCENTRATIONS FOR ON AND OFF-BASE GROUNDWATER LOCATIONS OCTOBER 2024 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOS + PFHxS (µg/L)

- > 50
- 10 - 50
- 2 - 10
- 0.07 - 2
- 0.01 - 0.07
- < 0.01

Note:

• OTH115 not shown on map for privacy reasons.

N

0 1 2 km

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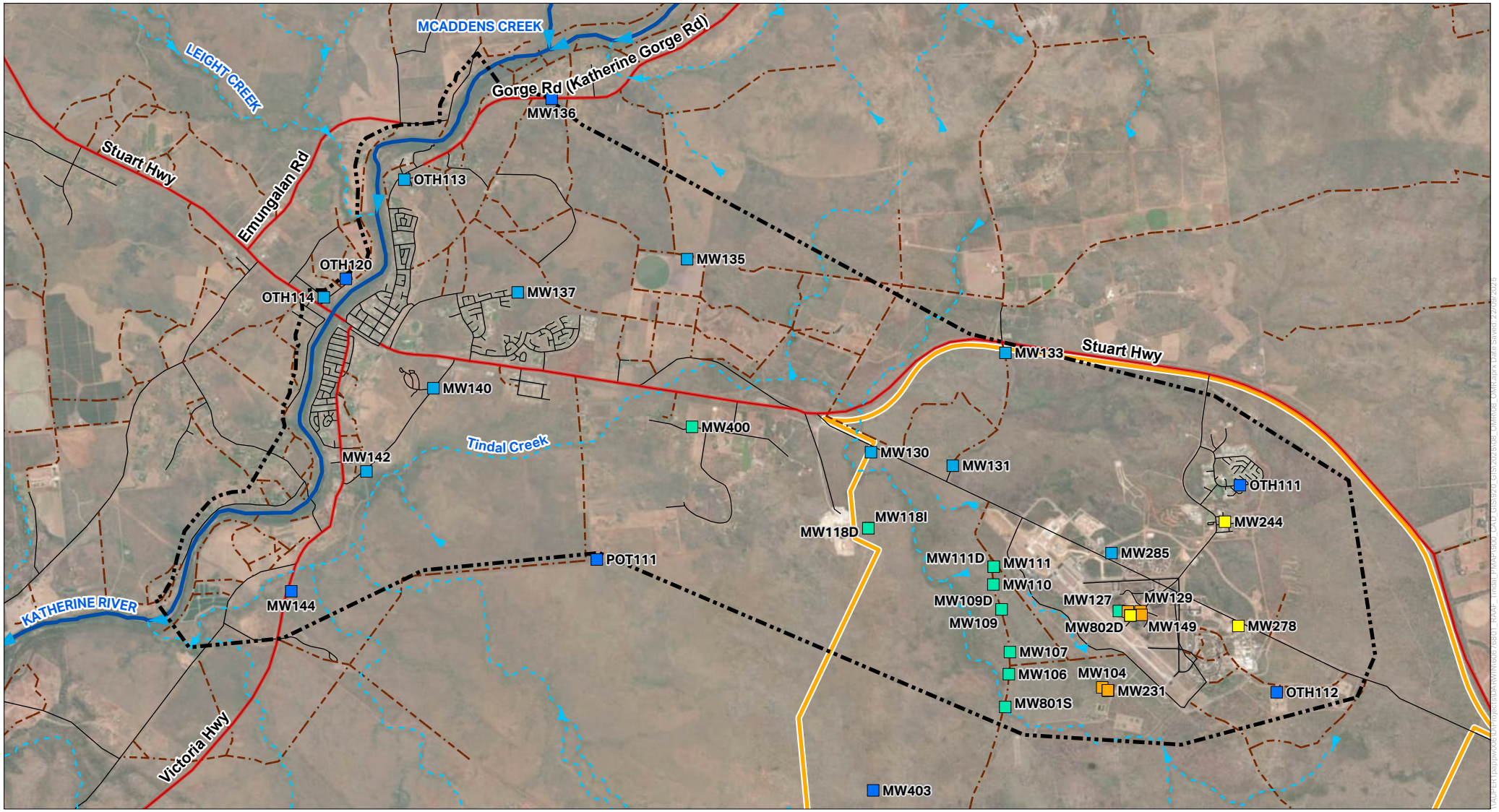

FIGURE F7.4: PFOA CONCENTRATIONS FOR ON AND OFF-BASE GROUNDWATER LOCATIONS OCTOBER 2024 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOA (µg/L)

- > 19
- 10 - 19
- 0.56 - 10
- 0.01 - 0.56
- <0.01

Note:

• OTH115 not shown on map for privacy reasons.

N

0 1 2 km

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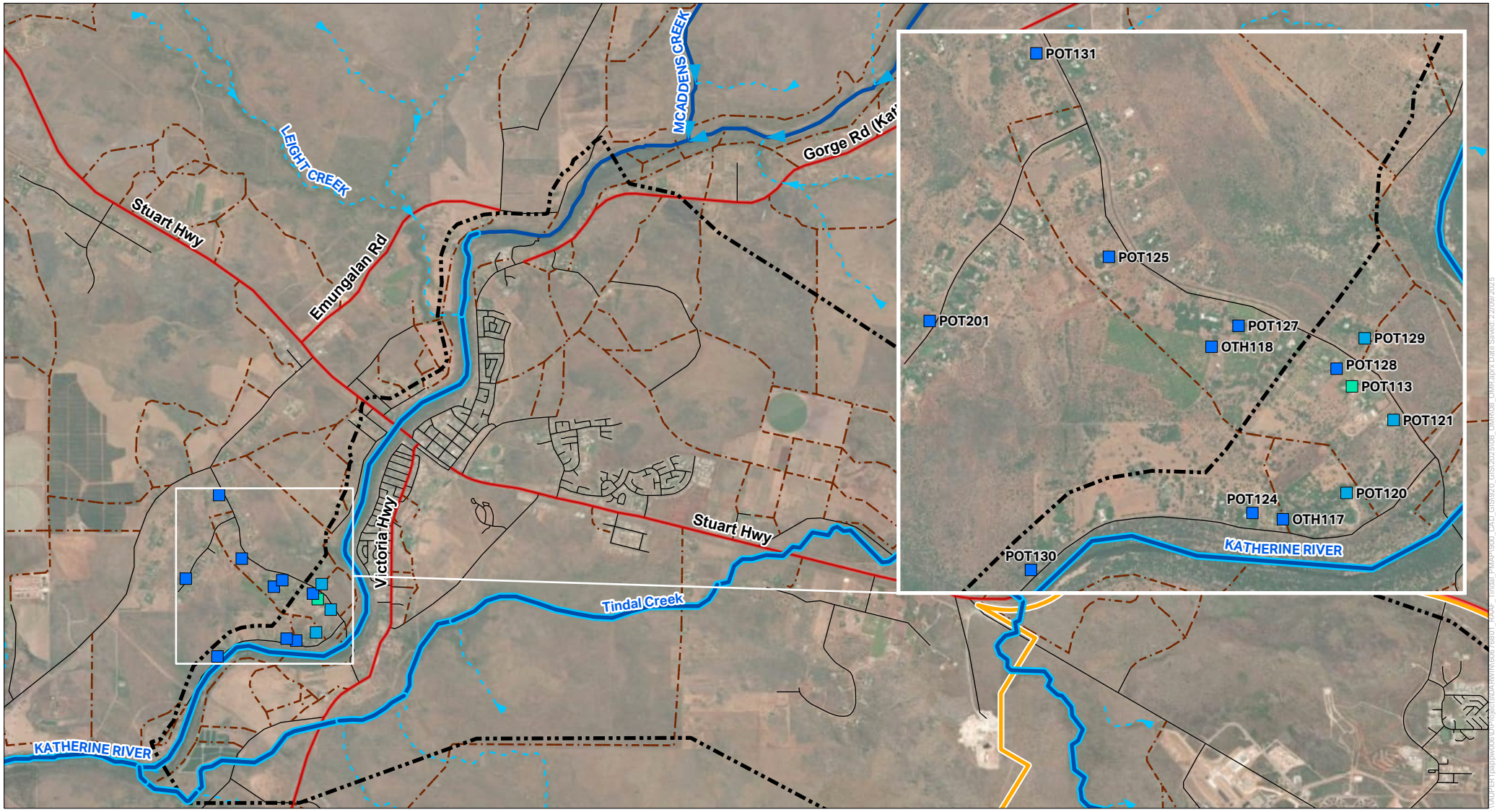

FIGURE F7.5: SUM OF PFOS + PFHXS CONCENTRATIONS FOR PRIVATE PROPERTY GROUNDWATER LOCATIONS NOVEMBER 2024 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Katherine River
- Drainage

PFOS + PFHxS (µg/L)

- > 50
- 10 - 50
- 2 - 10
- 0.07 - 2
- 0.01 - 0.07
- < 0.01

Note:

• OTH119, POT112, POT114, POT126 and POT198 are not shown on map for privacy reasons.

N

0 1 2 km

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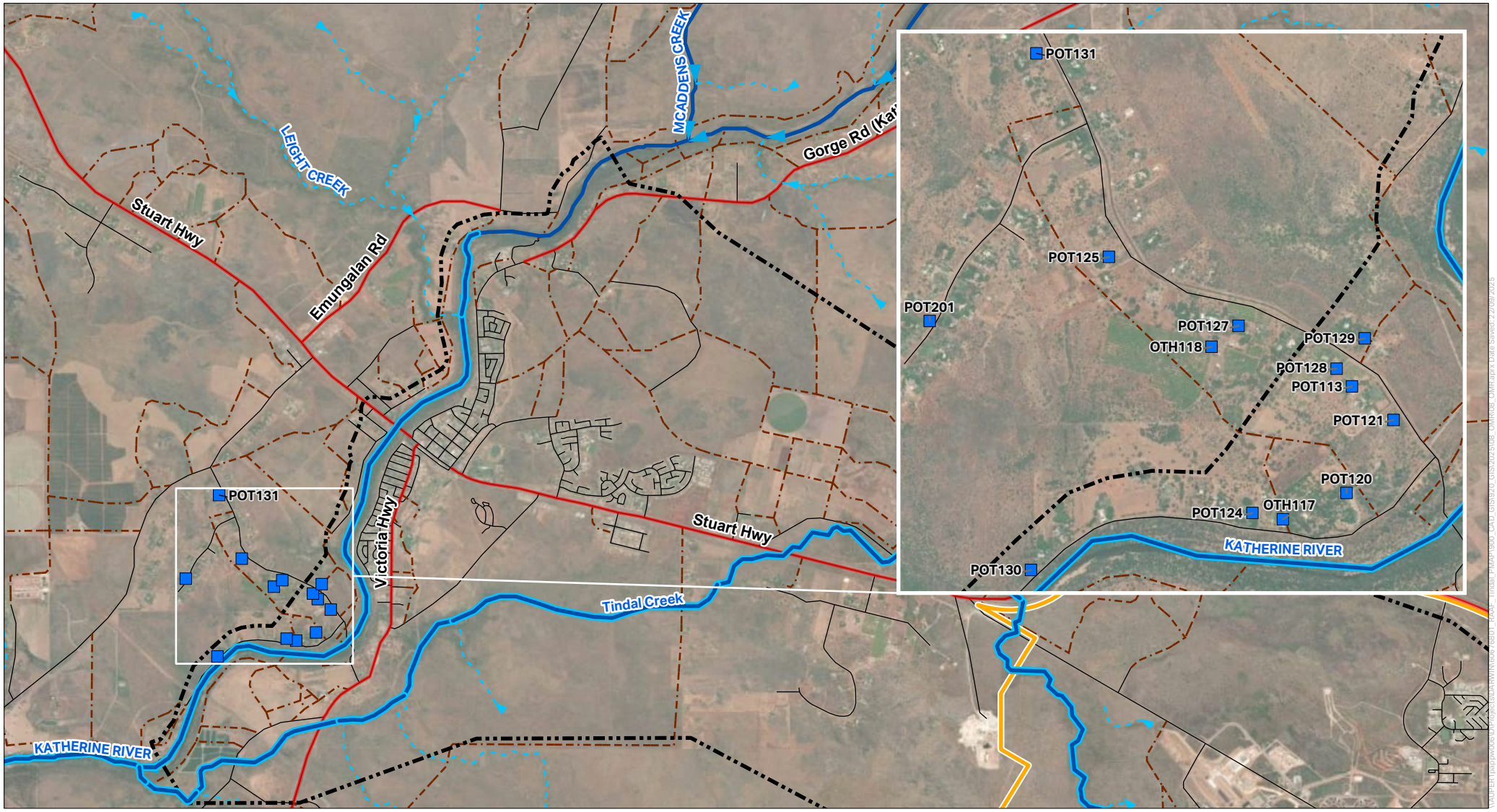

FIGURE F7.6: PFOA CONCENTRATIONS FOR PRIVATE PROPERTY GROUNDWATER LOCATIONS NOVEMBER 2024 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Katherine River
- Drainage

PFOA (µg/L)

- > 19
- 10 - 19
- 0.56 - 10
- 0.01 - 0.56
- <0.01

Note:

• OTH119, POT112, POT114, POT126 and POT198 are not shown on map for privacy reasons.

N

0 1 2 km

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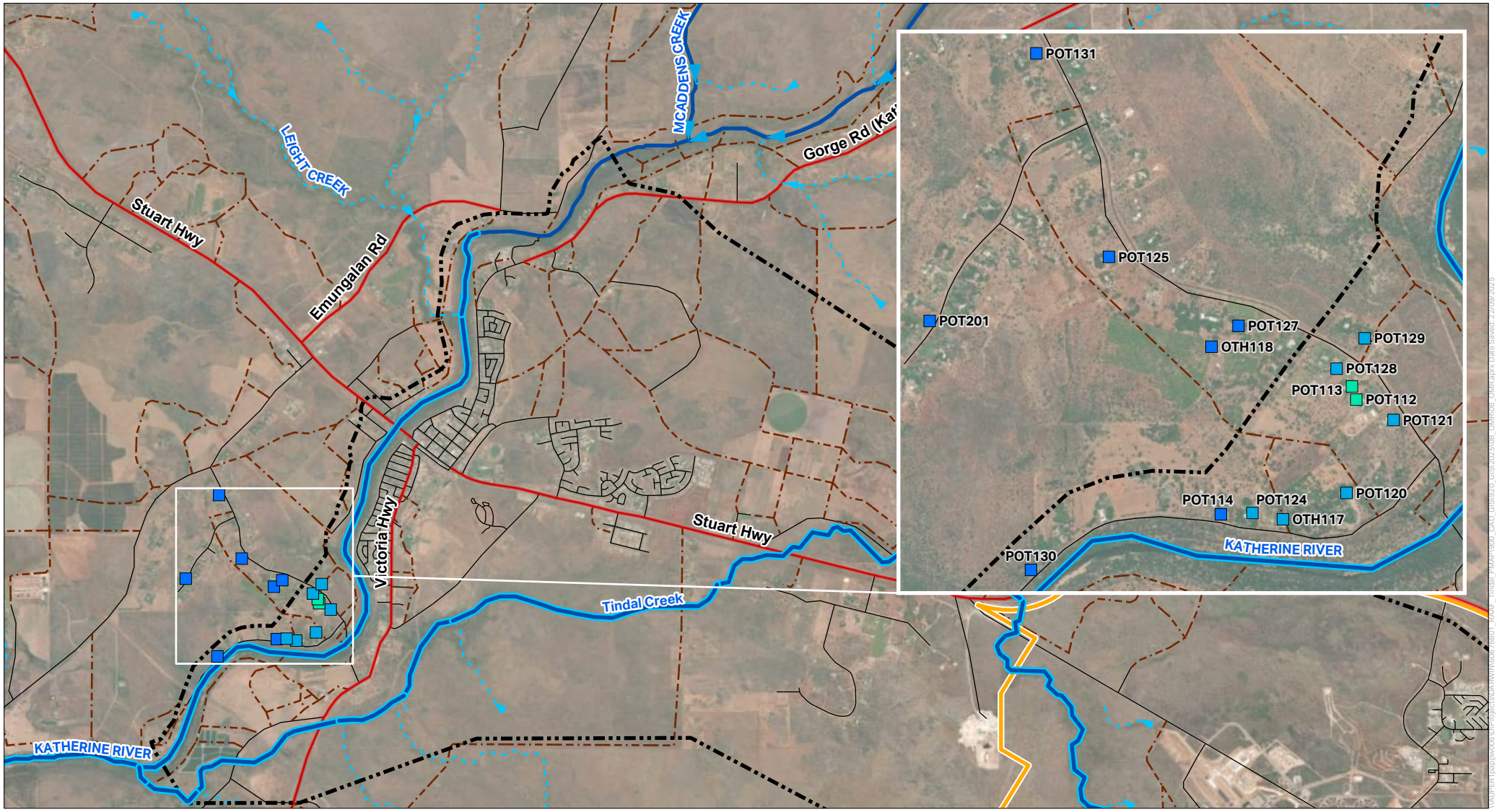

FIGURE F7.7: SUM OF PFOS+PFHXS CONCENTRATIONS FOR FOR PRIVATE PROPERTY GROUNDWATER LOCATIONS DECEMBER 2024 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Katherine River
- Drainage

PFOS + PFHxS (µg/L)

- > 50
- 10 - 50
- 2 - 10
- 0.07 - 2
- 0.01 - 0.07
- < 0.01

Note:

• OTH119, POT112, POT114, POT126 and POT198 are not shown on map for privacy reasons.

N

0 1 2 km

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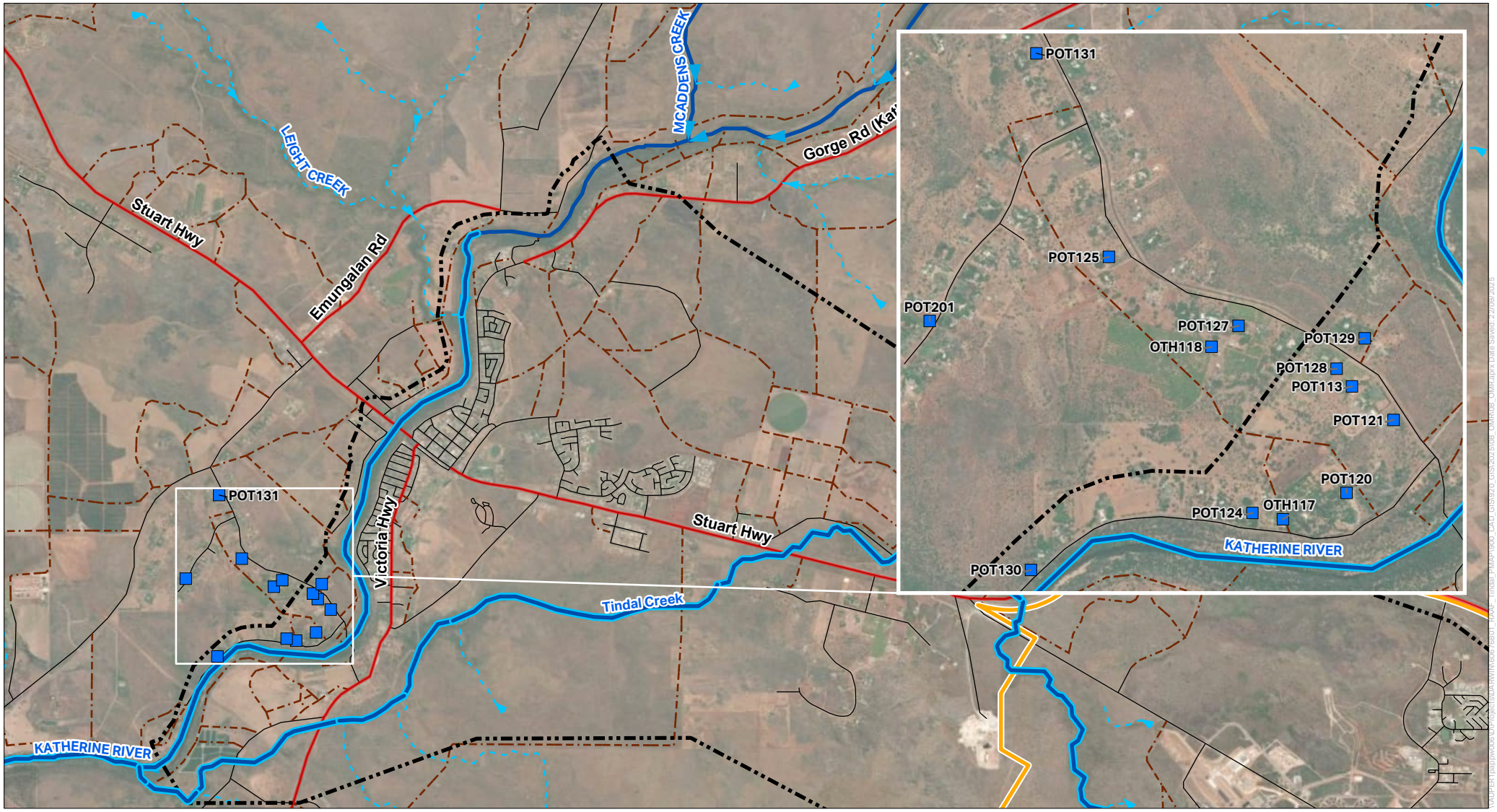

FIGURE F7.8: PFOA CONCENTRATIONS FOR PRIVATE PROPERTY GROUNDWATER LOCATIONS DECEMBER 2024 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Katherine River
- Drainage

PFOA (µg/L)

- > 19
- 10 - 19
- 0.56 - 10
- 0.01 - 0.56
- <0.01

Note:

• OTH119, POT112, POT114, POT126 and POT198 are not shown on map for privacy reasons.

N

0 1 2 km

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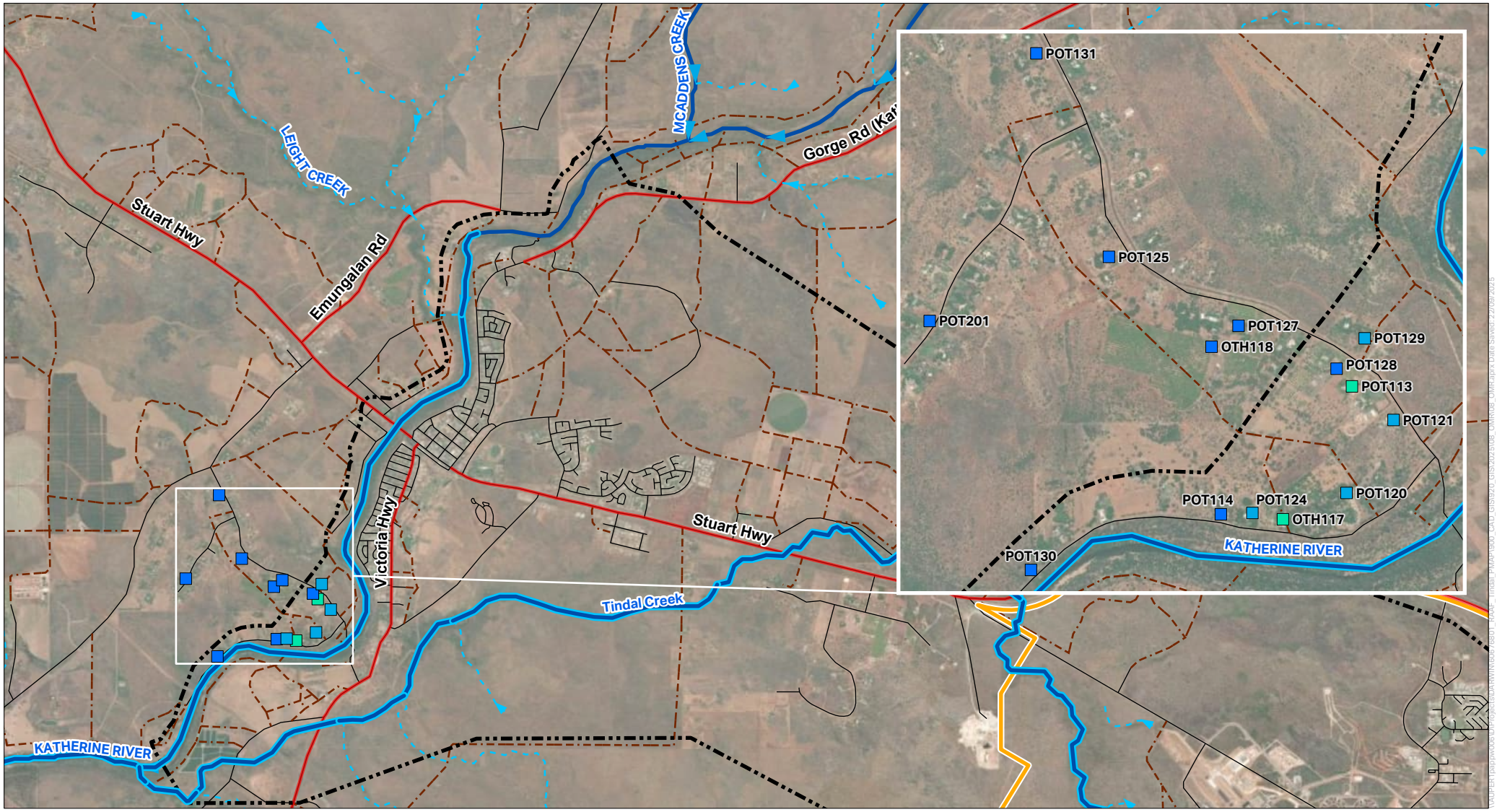

FIGURE F7.9: SUM OF PFOS+PFHXS CONCENTRATIONS FOR OFF-BASE GROUNDWATER LOCATIONS JANUARY 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Katherine River
- Drainage

PFOS + PFHxS (µg/L)

- > 50
- 10 - 50
- 2 - 10
- 0.07 - 2
- 0.01 - 0.07
- < 0.01

Note:

• OTH119, POT112, POT114, POT126 and POT198 are not shown on map for privacy reasons.

N

0 1 2 km

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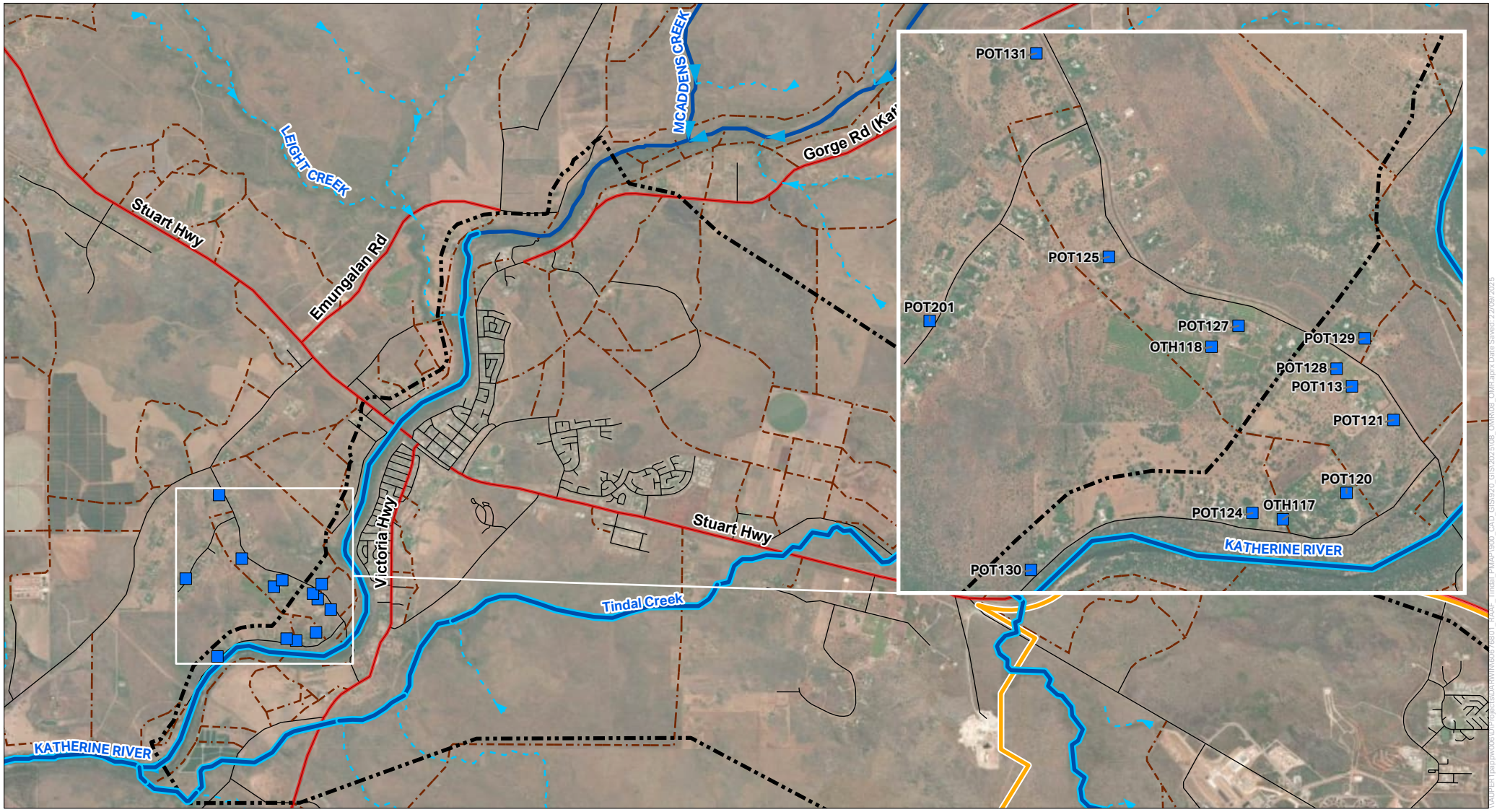

FIGURE F7.10: PFOA CONCENTRATIONS FOR FOR PRIVATE PROPERTY GROUNDWATER LOCATIONS JANUARY 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Katherine River
- Drainage

PFOA (µg/L)

- > 19
- 10 - 19
- 0.56 - 10
- 0.01 - 0.56
- <0.01

Note:

• OTH119, POT112, POT114, POT126 and POT198 are not shown on map for privacy reasons.

N

0 1 2 km

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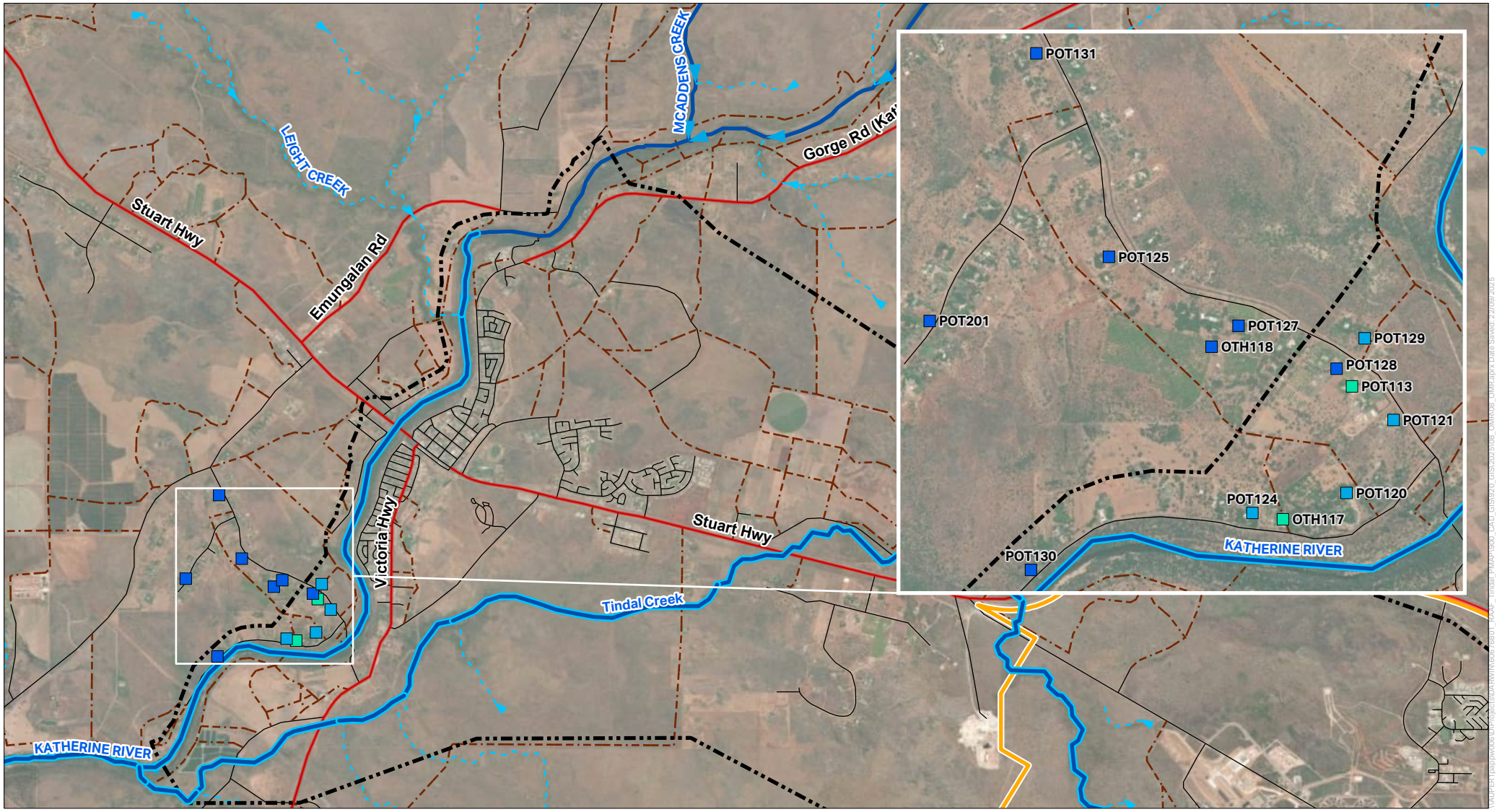

FIGURE F7.11: SUM OF PFOS + PFHxS CONCENTRATIONS FOR PRIVATE PROPERTY GROUNDWATER LOCATIONS FEBRUARY 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOS + PFHxS (µg/L)

- > 50
- 10 -50
- 2 - 10
- 0.07 - 2
- 0.01 - 0.07
- < 0.01

Note:

• OTH119, POT112, POT114, POT126, POT198 not shown for privacy reasons.

N

0 1 2 km

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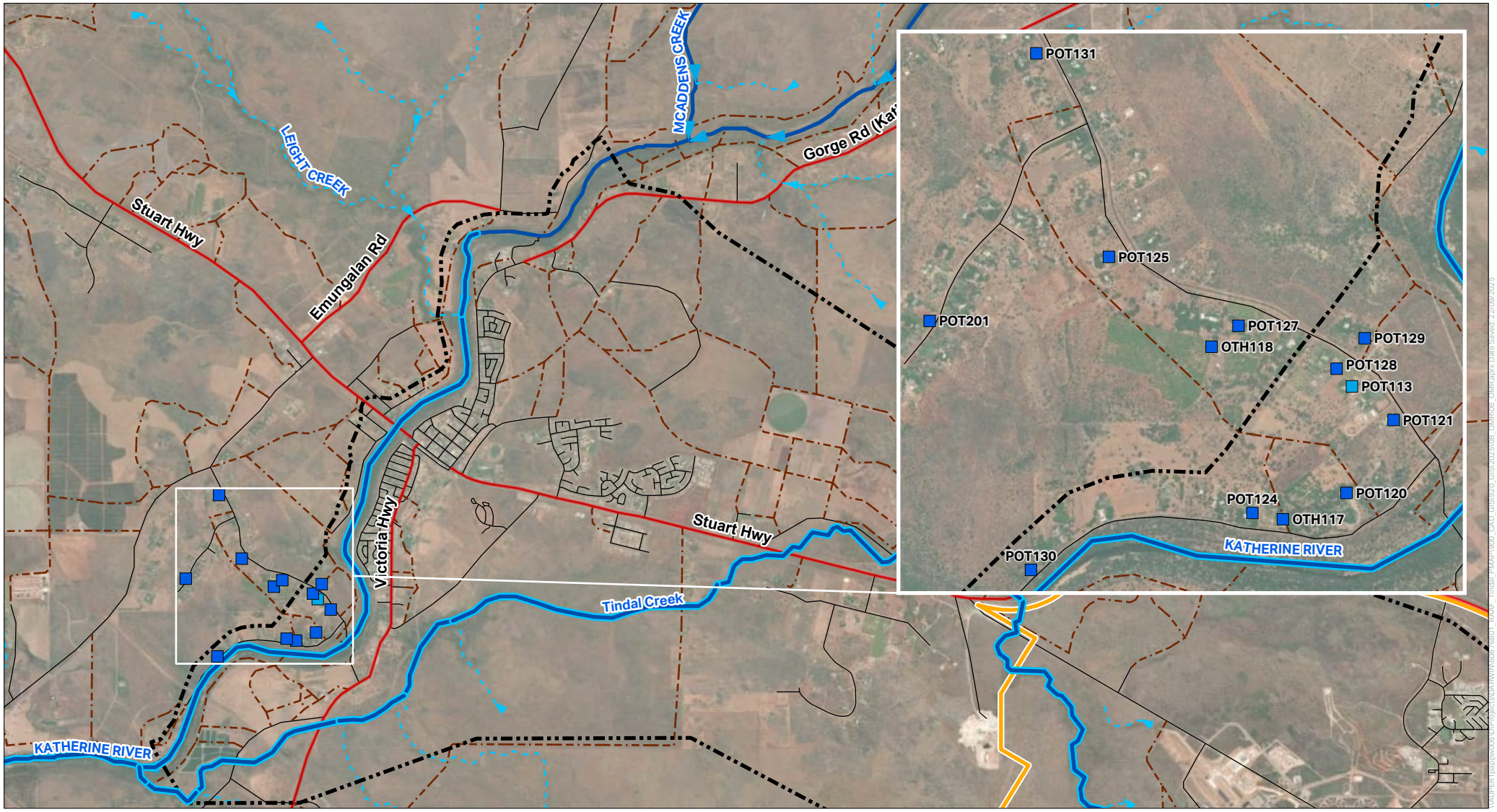

FIGURE F7.12: PFOA CONCENTRATIONS FOR PRIVATE PROPERTY GROUNDWATER LOCATIONS FEBRUARY 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOA (µg/L)

- > 19
- 10 - 19
- 0.56 - 19
- 0.01 - 0.56
- < 0.01

Note:

• OTH119, POT112, POT114, POT126, POT198 not shown for privacy reasons.

N

0 1 2 km

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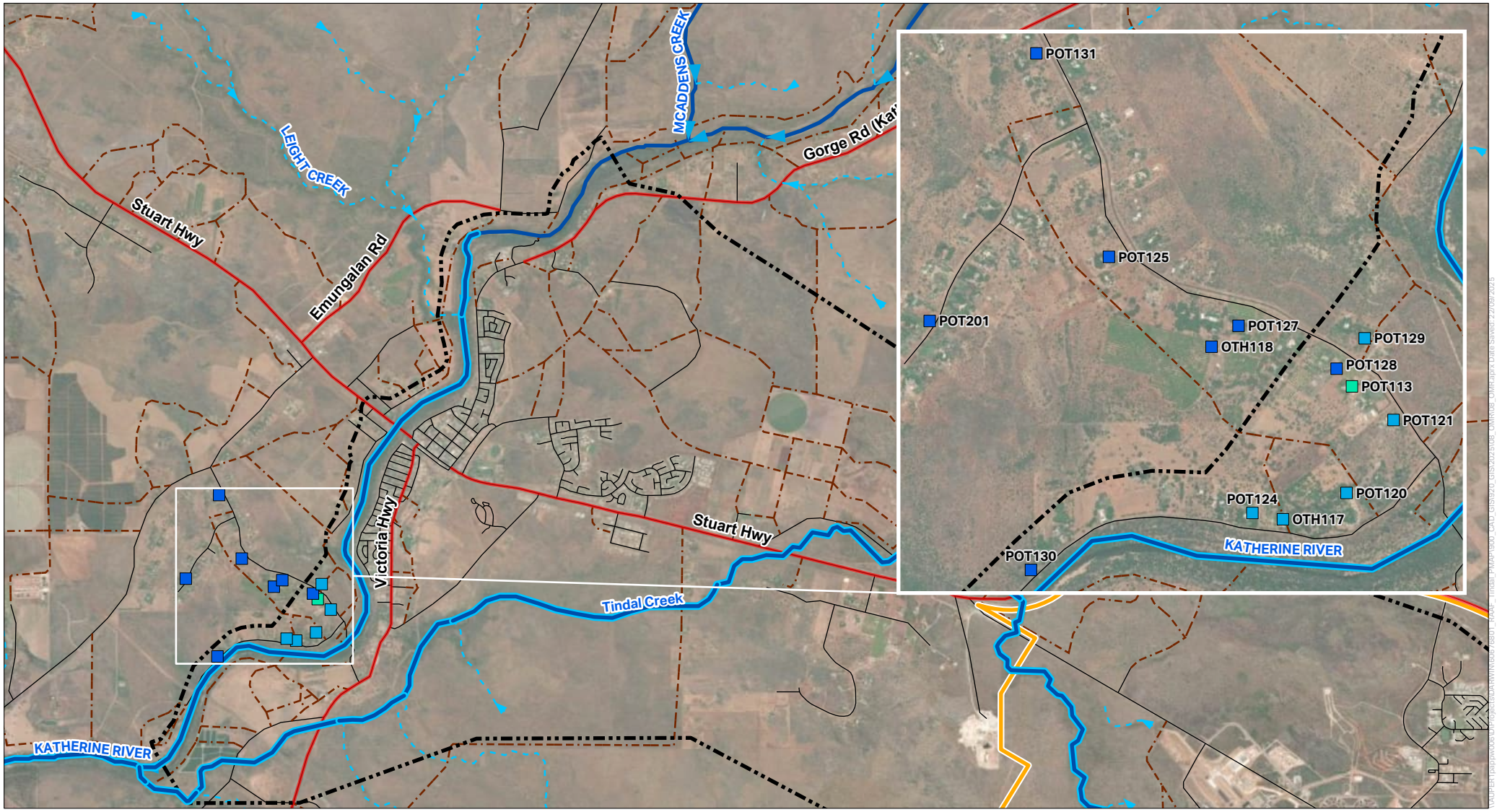

FIGURE F7.13 SUM OF PFOS + PFHxS CONCENTRATIONS FOR PRIVATE PROPERTY GROUNDWATER LOCATIONS MARCH 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOS + PFHxS (µg/L)

- > 50
- 10 -50
- 2 - 10
- 0.07 - 2
- 0.01 - 0.07
- < 0.01

Note:

• OTH119, POT112, POT114, POT126, POT198 not shown for privacy reasons.

N

0 1 2 km

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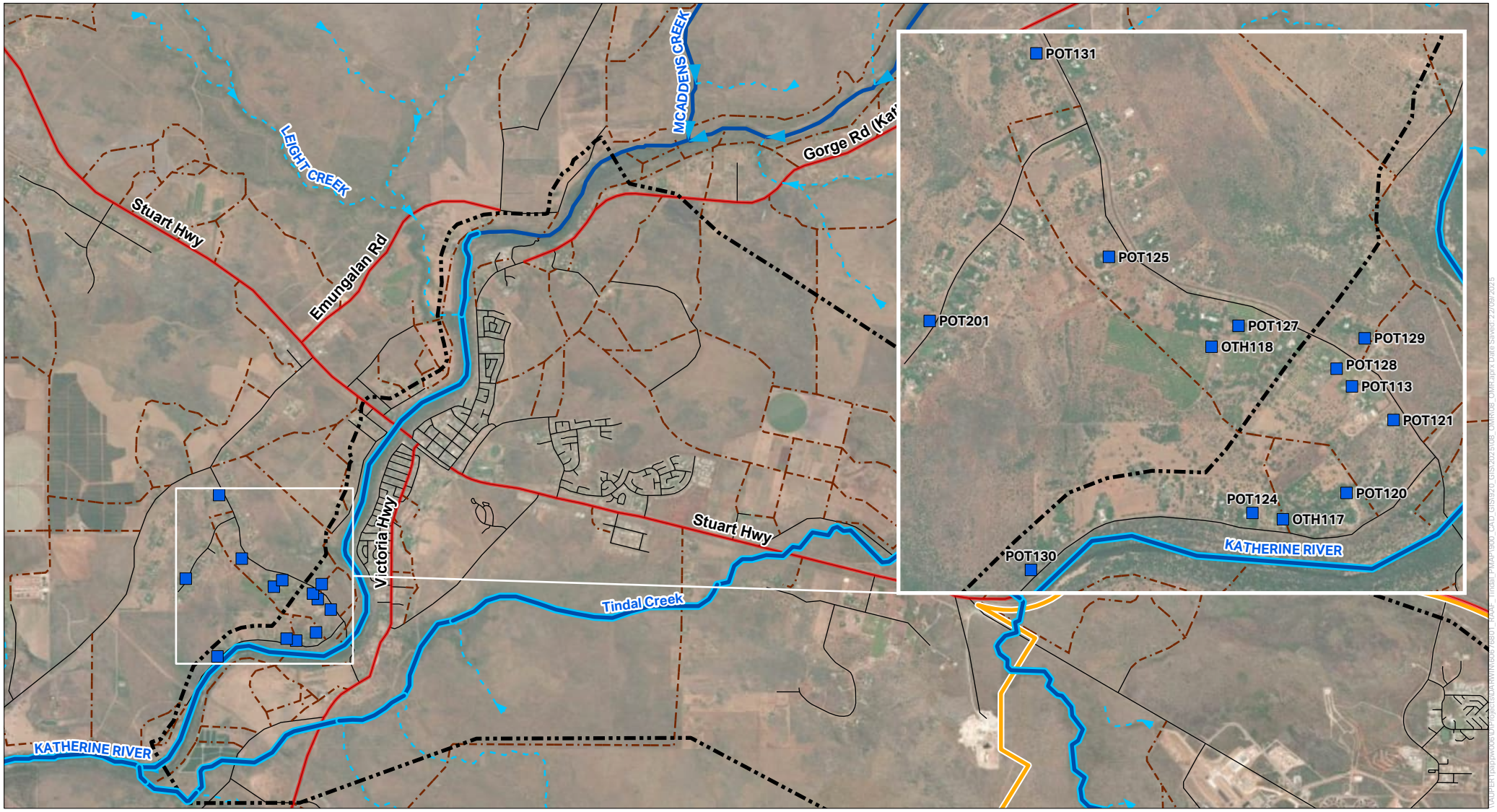

FIGURE F7.14: PFOA CONCENTRATIONS FOR PRIVATE PROPERTY GROUNDWATER LOCATIONS MARCH 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOA (µg/L)

- > 19
- 10 - 19
- 0.056 - 10
- 0.01 - 0.56
- < 0.01

Note:

• OTH119, POT112, POT114, POT126, POT198 not shown for privacy reasons.

N

0 1 2 km

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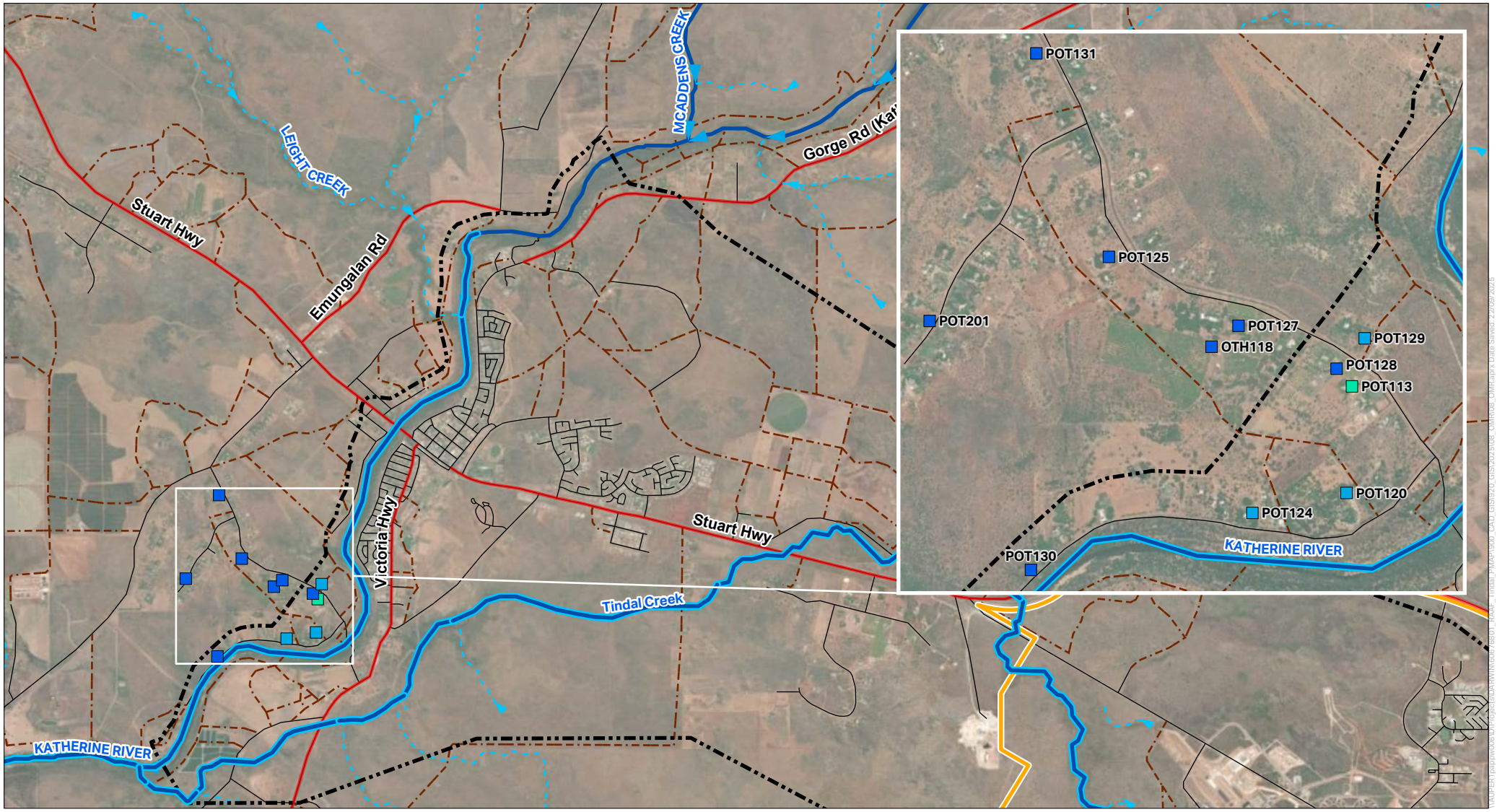

FIGURE F7.15: SUM OF PFOS + PFHxS CONCENTRATIONS FOR PRIVATE PROPERTY GROUNDWATER LOCATIONS APRIL 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOS + PFHxS (µg/L)

- > 50
- 10 - 50
- 2 - 10
- 0.07 - 2
- 0.01 - 0.07
- < 0.01

Note:

• OTH119, POT112, POT114, POT126, POT198 not shown for privacy reasons.

N

0 1 2 km

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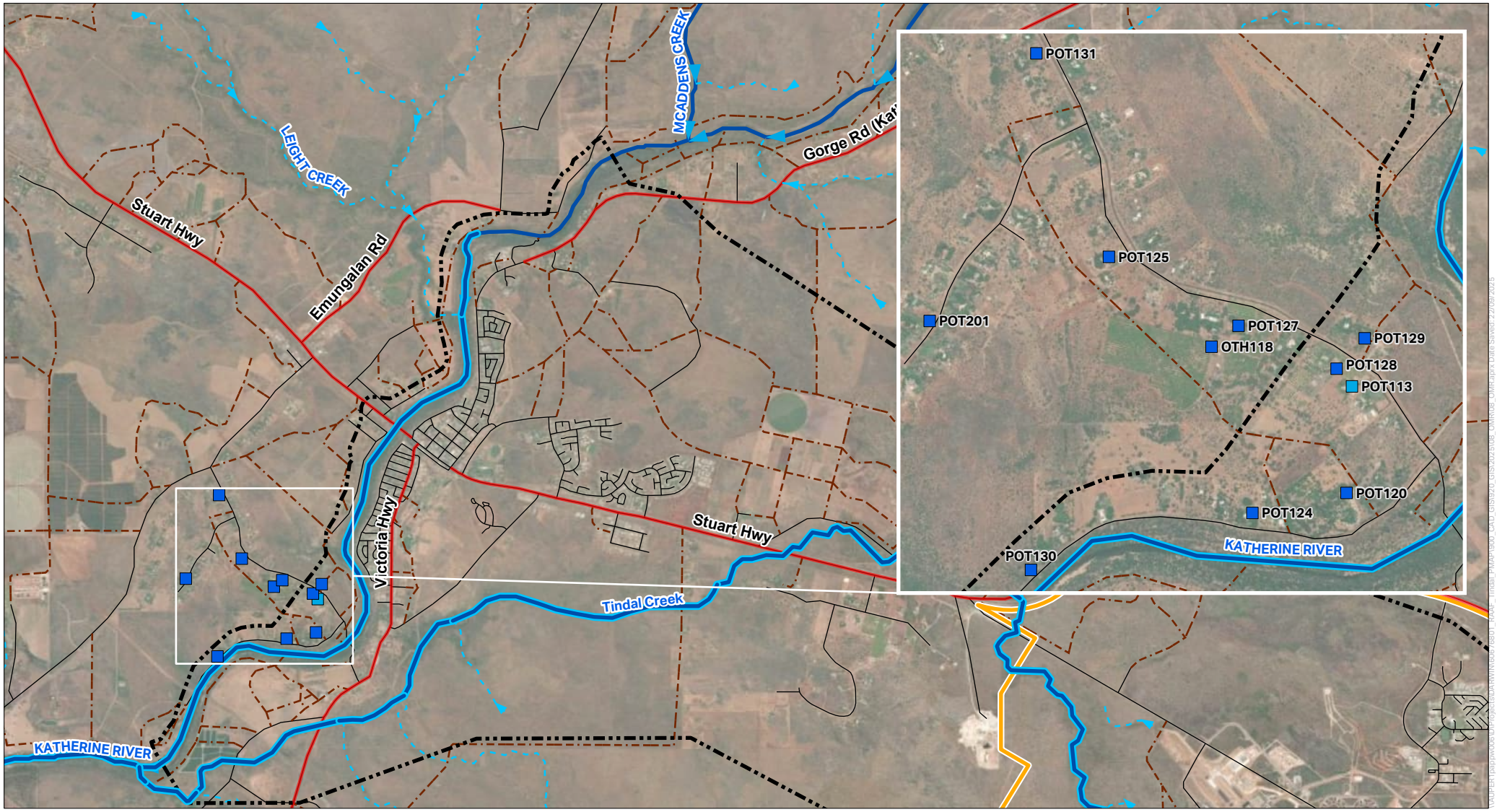

FIGURE F7.16: PFOA CONCENTRATIONS FOR PRIVATE PROPERTY GROUNDWATER LOCATIONS APRIL 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOA (µg/L)

- > 19
- 10 -19
- 0.56 -10
- 0.01 - 0.56
- > 0.01

Note:

• OTH119, POT112, POT114, POT121, POT126, POT198 not shown for privacy reasons.

N

0 1 2 km

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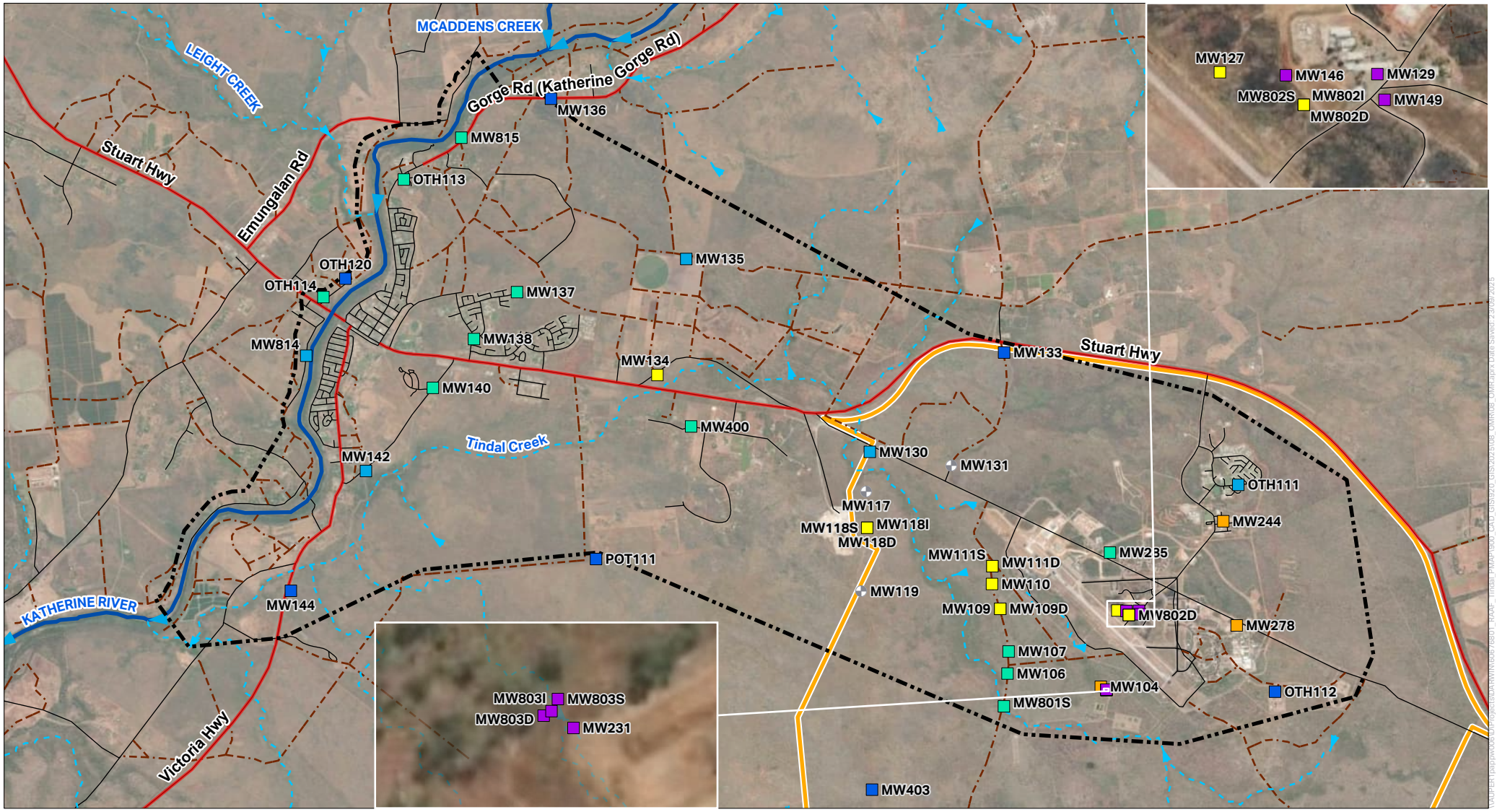

FIGURE F7.17: SUM OF PFOS + PFHxS CONCENTRATIONS FOR ON AND OFF-BASE GROUNDWATER LOCATIONS APRIL - MAY 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOS + PFHxS (µg/L)

- > 50
- 10 - 50
- 2 - 10
- 0.07 - 2
- 0.01 - 0.07
- < 0.01
- Not Sampled Due To Being Inaccessible, Dry or Blocked

Note:

• OTH115 not shown for privacy reasons

N

0 1 2 km

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FIGURE F7.18: PFOA CONCENTRATIONS FOR ON AND OFF-BASE GROUNDWATER LOCATIONS APRIL - MAY 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOA (µg/L)

- > 19
- 10 -19
- 0.56 -10
- 0.01 - 0.56
- < 0.01
- Not Sampled Due To Being Inaccessible, Dry or Blocked

Note:

• OTH115 not shown for privacy reasons

N

0 1 2 km

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RAAF BASE TINDAL
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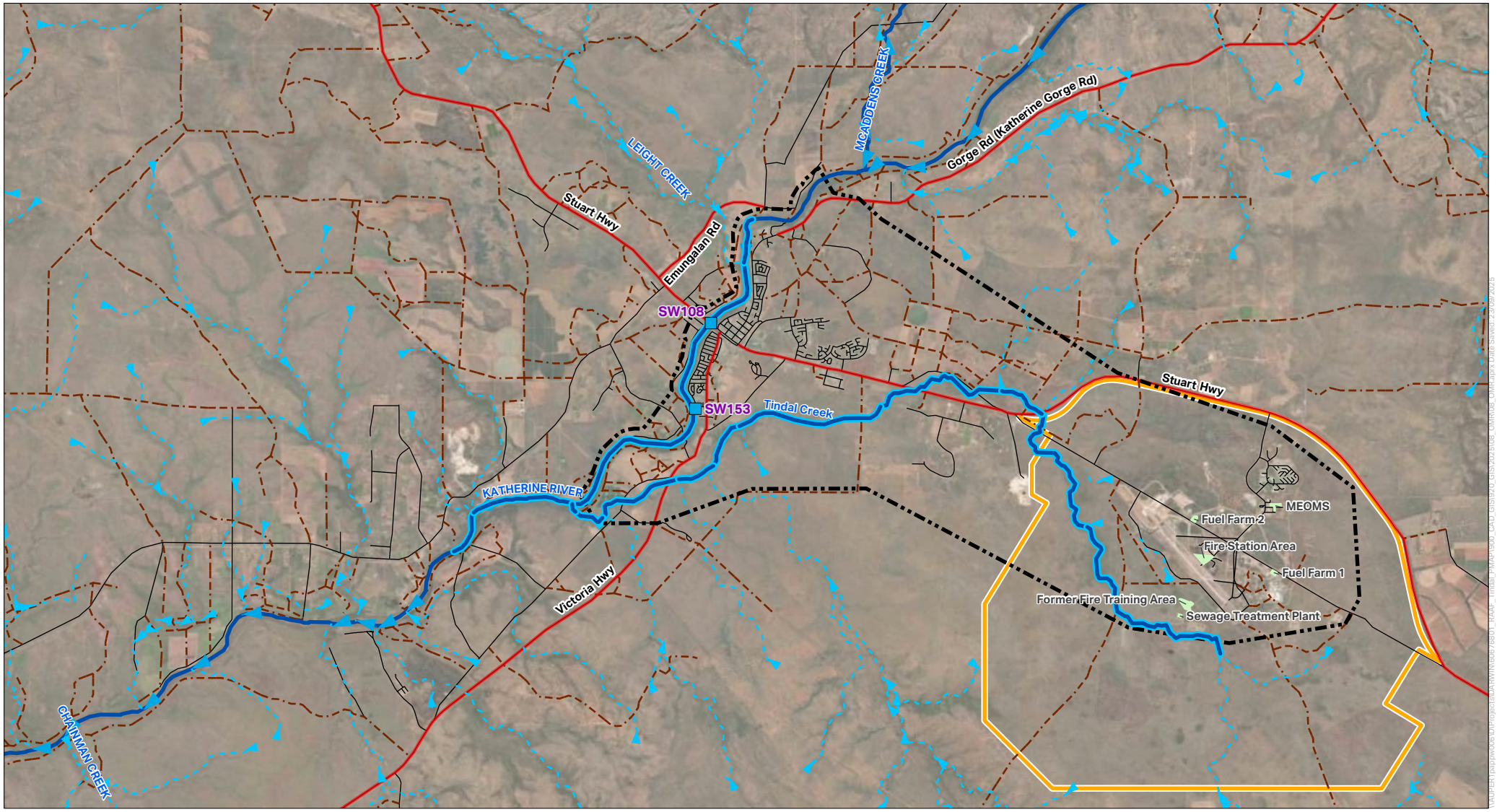

FIGURE F8.1: SUM OF PFOS + PFHxS CONCENTRATIONS FOR OFF-BASE SURFACE WATER LOCATIONS JUNE 2024 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Minor Creek
- Katherine River
- Drainage
- Source Areas

PFOS + PFHxS (µg/L)

- > 50
- 10 - 50
- 2 - 10
- 0.07 - 2
- 0.01 - 0.07
- < 0.01

N

0 1 2 3 km

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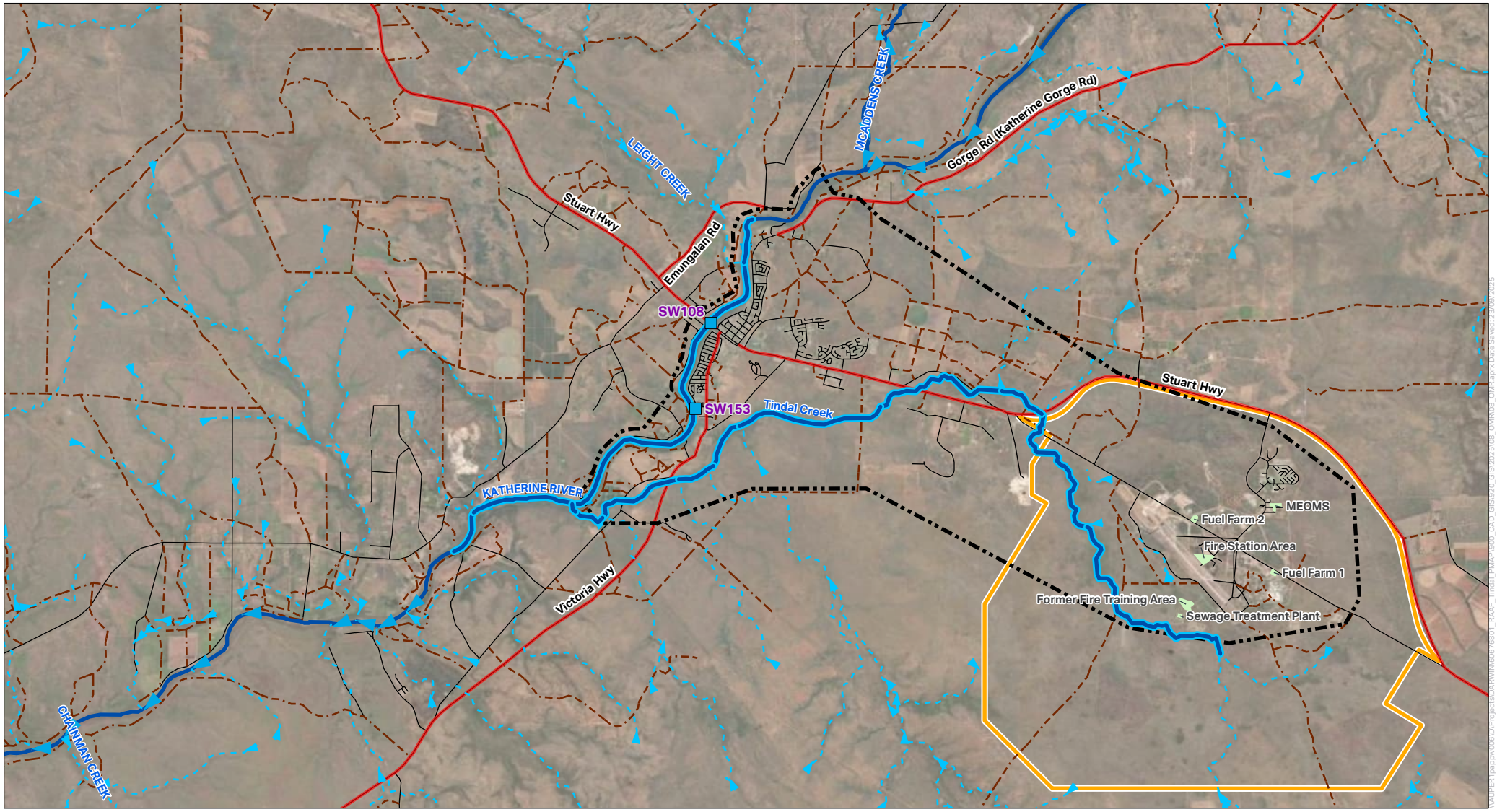

FIGURE F8.2: PFOA CONCENTRATIONS FOR OFF-BASE SURFACE WATER LOCATIONS JUNE 2024 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage
- Source Areas

PFOA (µg/L)

- > 19
- 10 - 19
- 0.56 - 10
- 0.01 - 0.56
- <0.01

N

0 1 2 3 km

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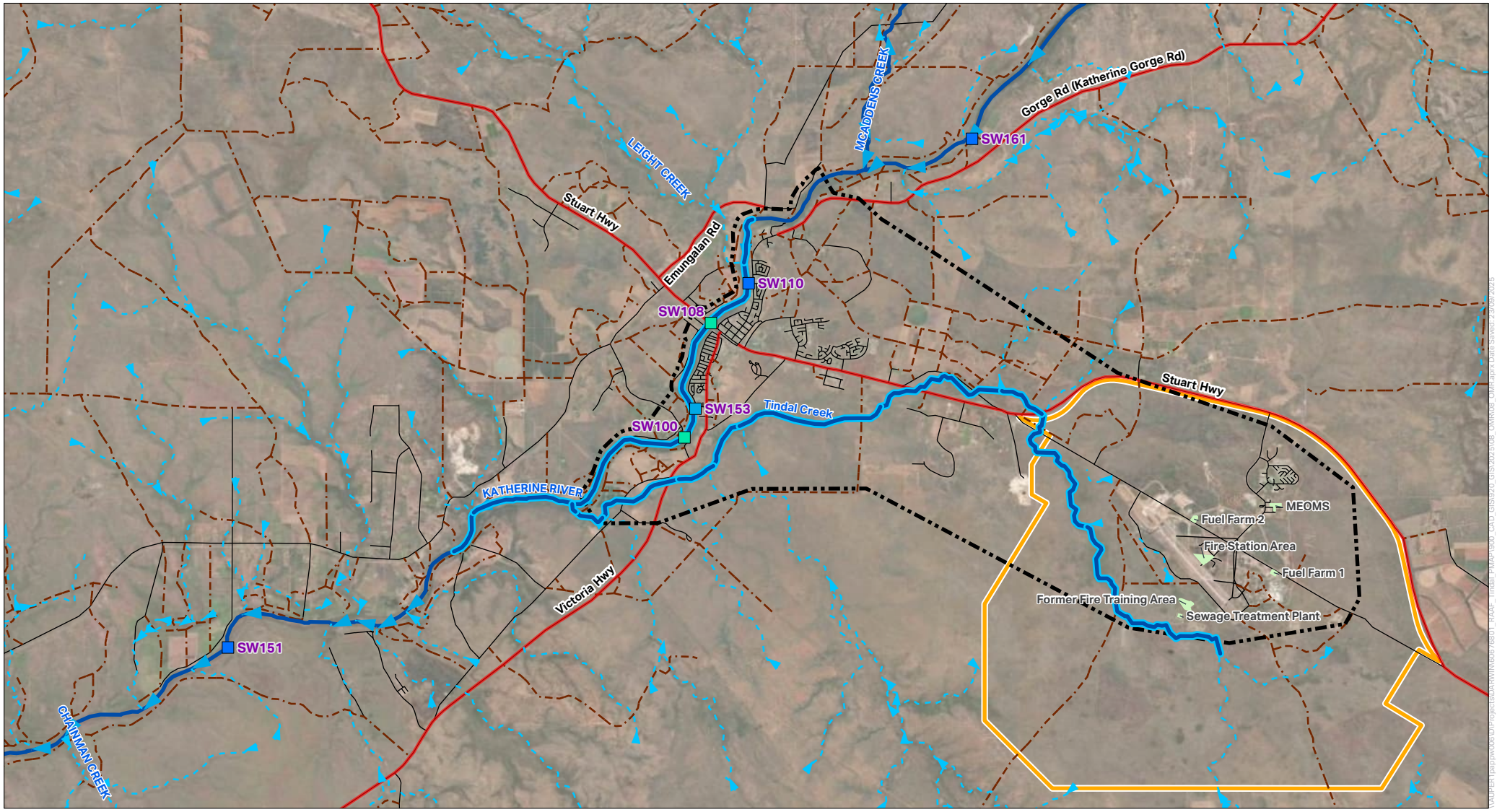

FIGURE F8.3: SUM OF PFOS + PFHxS CONCENTRATIONS FOR OFF-BASE SURFACE WATER LOCATIONS OCTOBER 2024 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Minor Creek
- Katherine River
- Drainage
- Source Areas

PFOS + PFHxS (µg/L)

- > 50
- 10 - 50
- 2 - 10
- 0.07 - 2
- 0.01 - 0.07
- < 0.01

N

0 1 2 3 km

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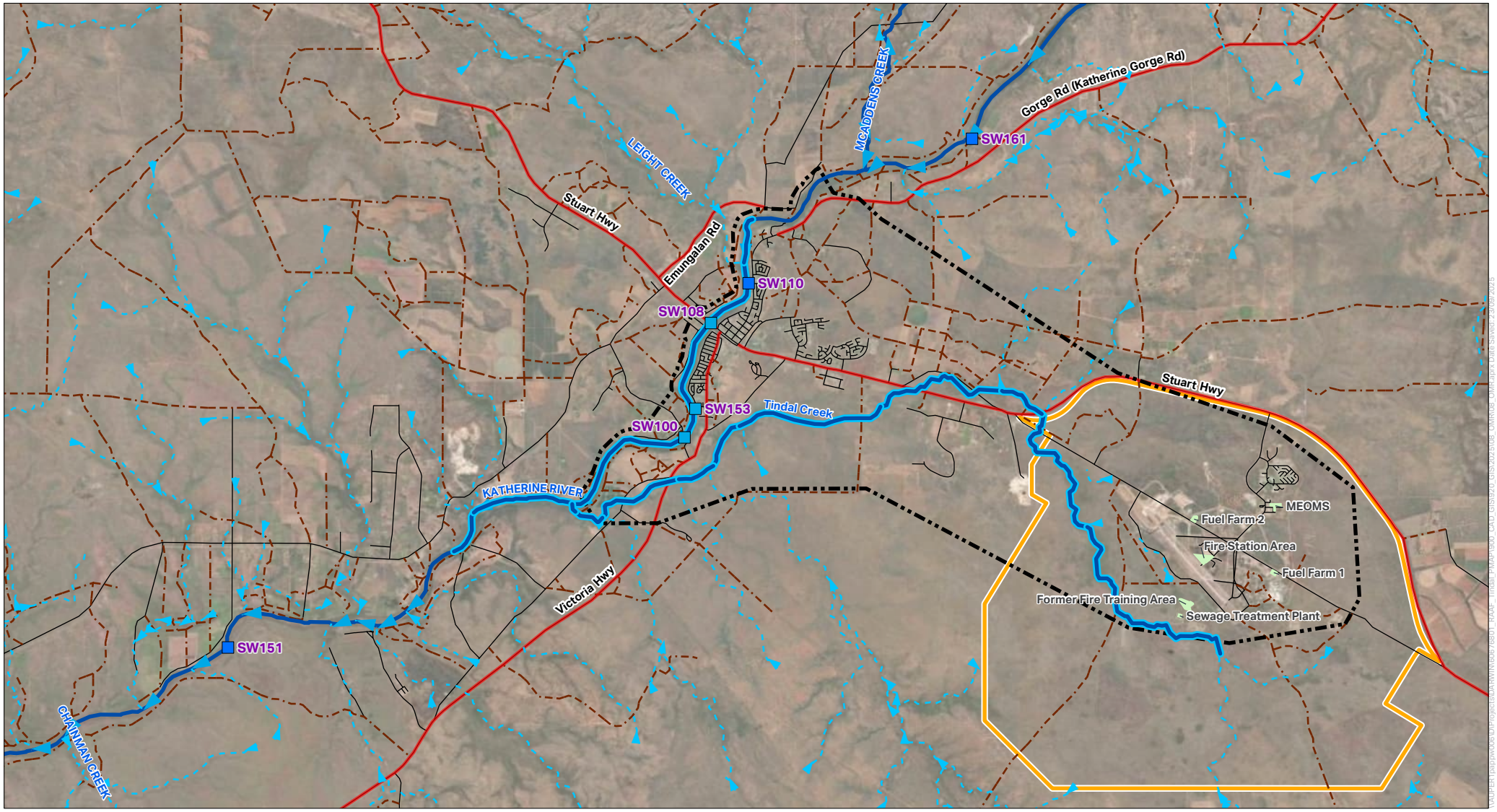

FIGURE F8.4: PFOA CONCENTRATIONS FOR OFF-BASE SURFACE WATER LOCATIONS OCTOBER 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage
- Source Areas

PFOA (µg/L)

- > 19
- 10 - 19
- 0.56 - 10
- 0.01 - 0.56
- <0.01

N

0 1 2 3 km

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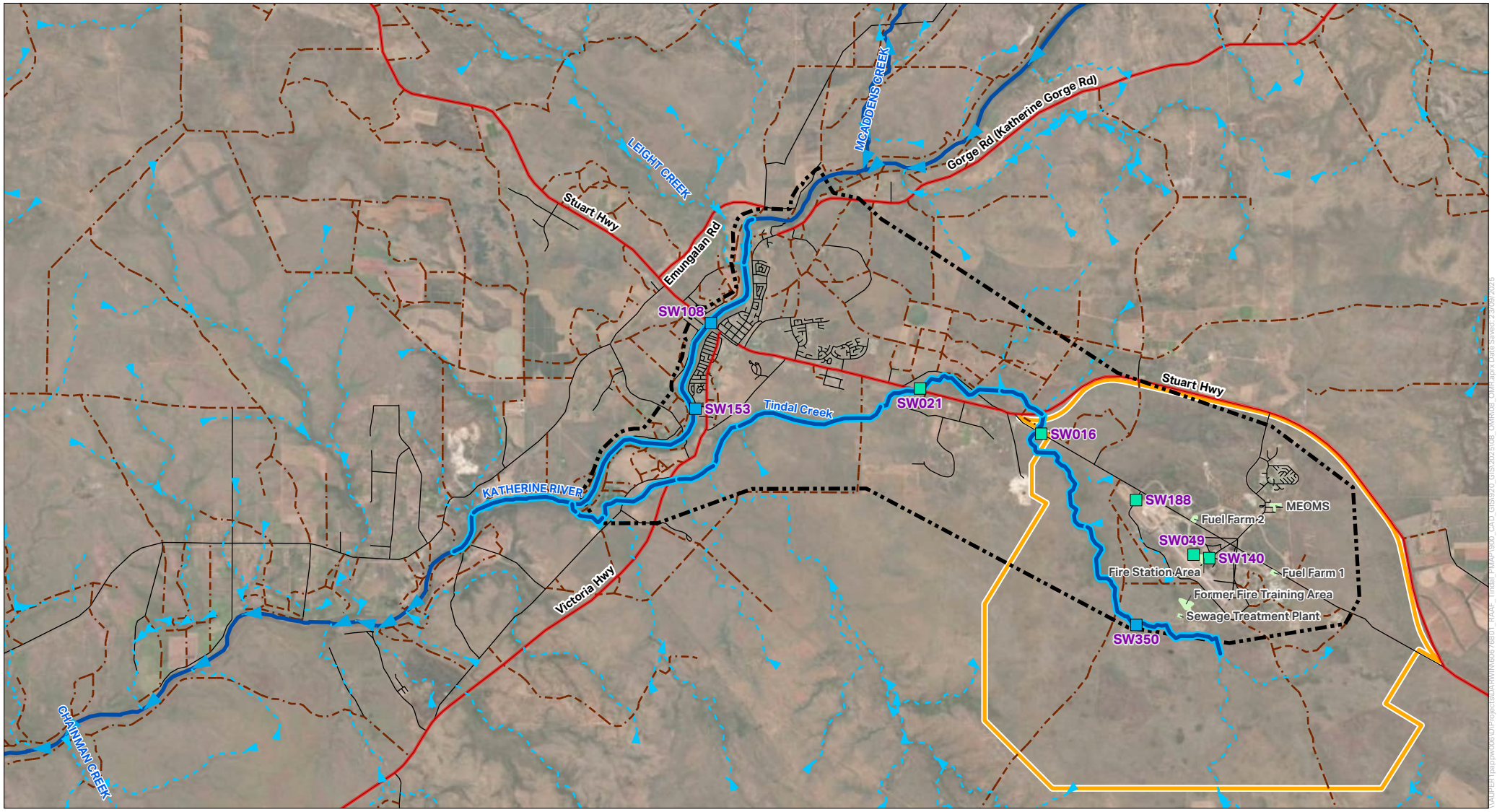

FIGURE F8.5: SUM OF PFOS+PFHXS CONCENTRATIONS FOR ON- AND OFF-BASE SURFACE WATER LOCATIONS DECEMBER 2024 AND JANUARY 2025 SAMPLING EVENTS

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage
- Source Areas

PFOS + PFHxS (µg/L)

- > 50
- 10 - 50
- 2 - 10
- 0.07 - 2
- 0.01 - 0.07
- < 0.01

Note:

• OTH115 not shown for privacy reasons

N

0 1 2 3 km

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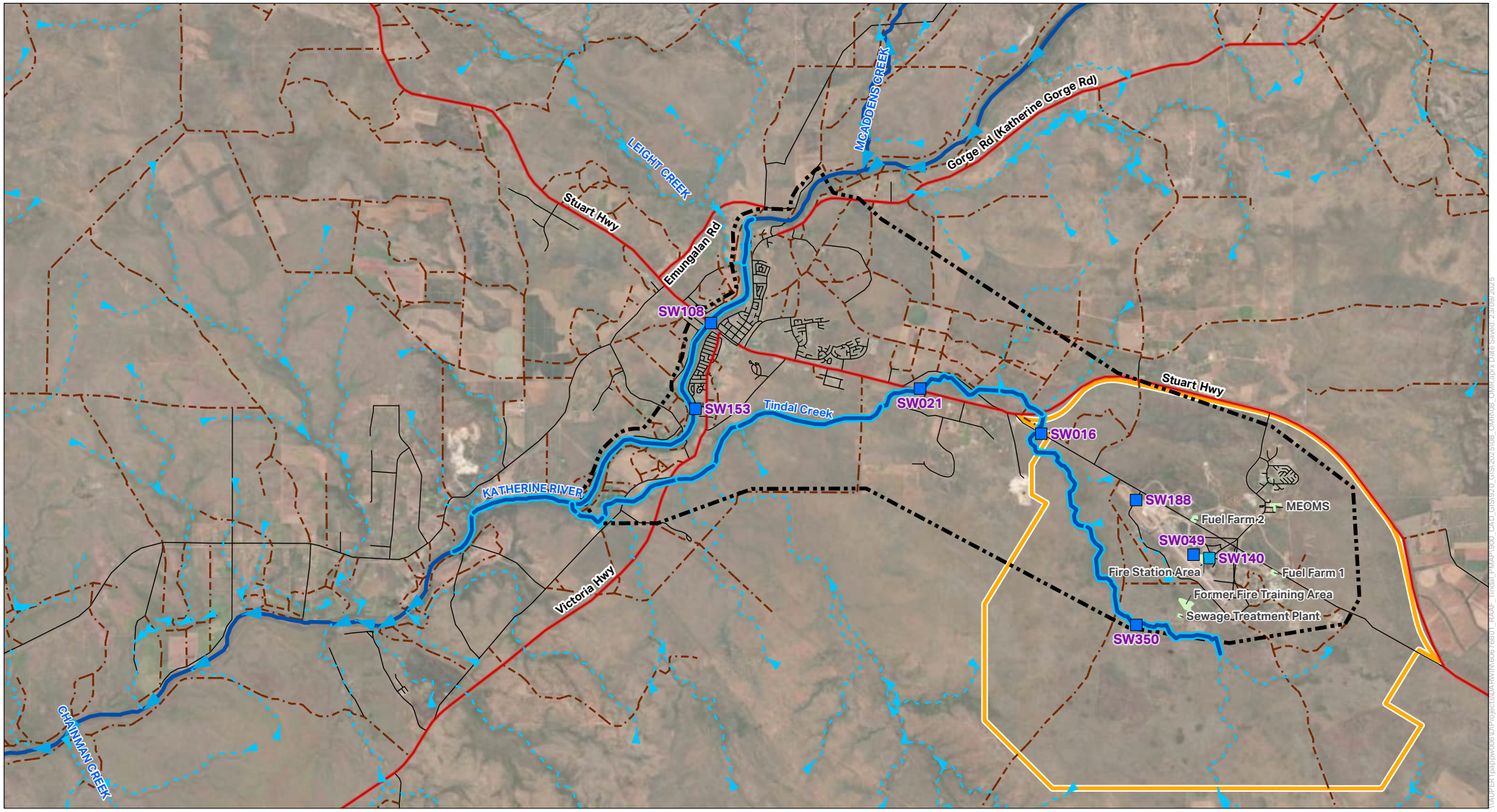

FIGURE F8.6: PFOA CONCENTRATIONS FOR ON- AND OFF-BASE SURFACE WATER LOCATIONS DECEMBER 2024 AND JANUARY 2025 SAMPLING EVENTS

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage
- Source Areas

PFOA (µg/L)

- > 19
- 10 - 19
- 0.56 - 10
- 0.01 - 0.56
- <0.01

N

0 1 2 3 km

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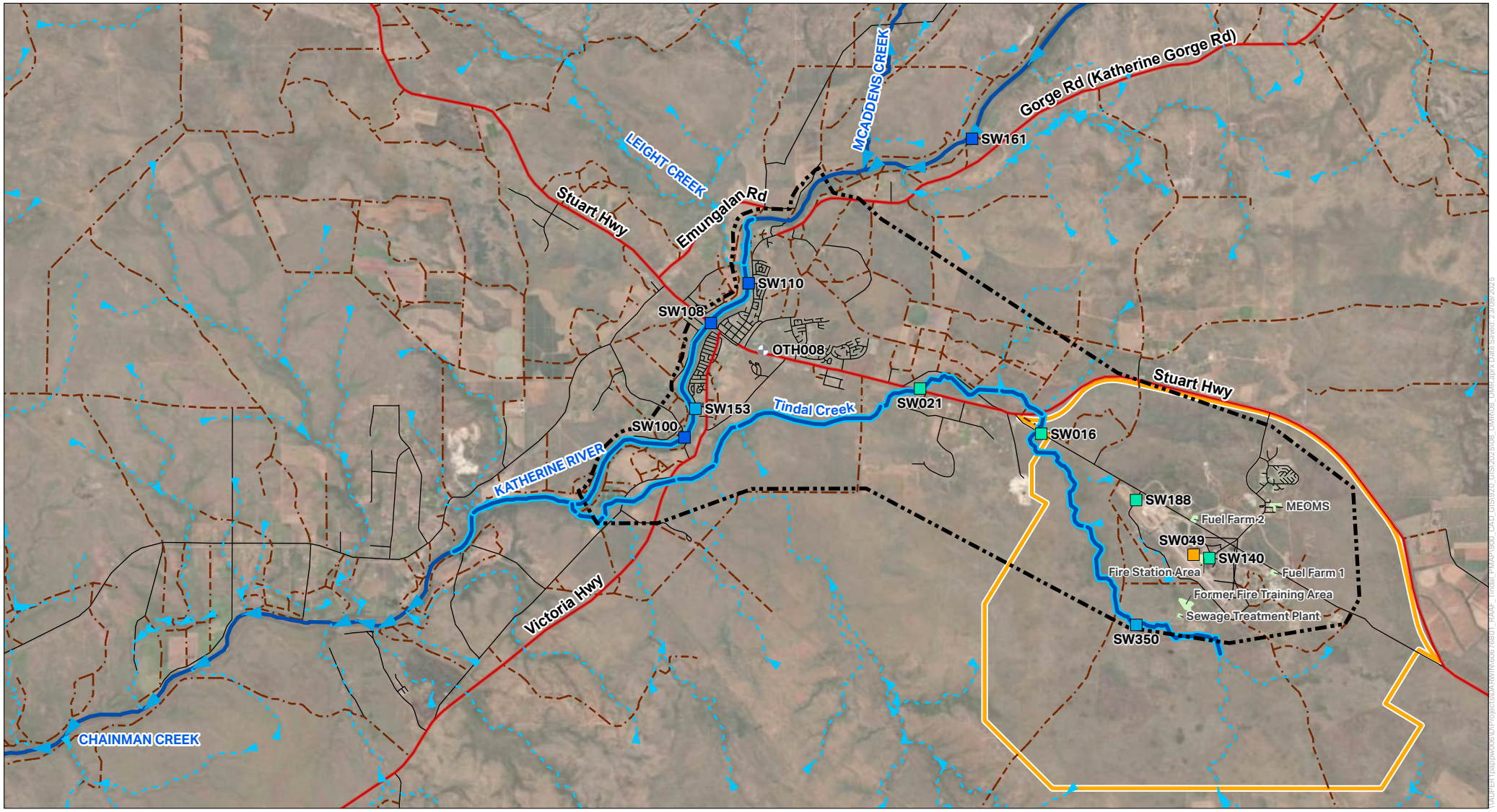

FIGURE F8.7: SUM OF PFOS + PFHxS CONCENTRATIONS FOR ON AND OFF-BASE SURFACE WATER LOCATIONS MARCH-APRIL 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage
- Source Areas

PFOS + PFHxS (µg/L)

- > 50
- 10 - 50
- 2 - 10
- 0.07 - 2
- 0.01 - 0.07
- < 0.01
- Not Sampled

N

0 1 2 km

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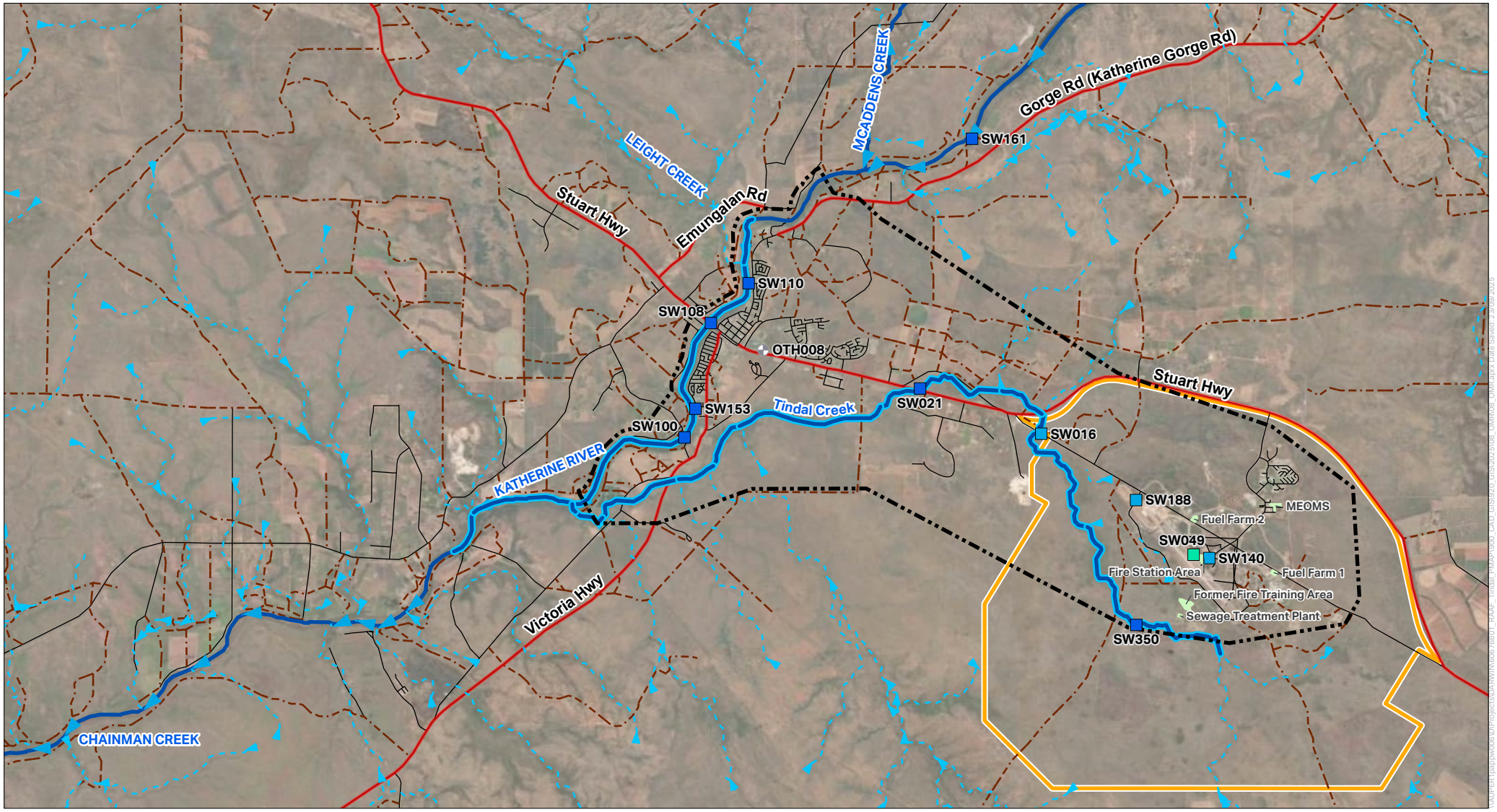

FIGURE F8.8: PFOA CONCENTRATIONS FOR ON AND OFF-BASE SURFACE WATER LOCATIONS MARCH-APRIL 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage
- Source Areas

PFOA (µg/L)

- > 19
- 10 -19
- 0.56 -10
- 0.01 - 0.56
- < 0.01
- Not Sampled

N

0 1 2 km

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Appendix B

SAQP and factual reports

Prepared for
Department of Defence PFAS Investigation and Management Branch
ABN: 68706814312

Dry Season 2024 Sampling Event Report

PFAS OMP - RAAF Base Tindal

01-Jul-2025
PFAS Ongoing Monitoring Program

aecom.com

Delivering a better world

Dry Season 2024 Sampling Event Report

PFAS OMP - RAAF Base Tindal

Client: Department of Defence PFAS Investigation and Management Branch

ABN: 68706814312

Prepared by

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Job No.: 60676801

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Quality Information

Document Dry Season 2024 Sampling Event Report

Date 01-Jul-2025

Originator [redacted]

Checker/s

Verifier/s

Revision History

Rev	Revision Date	Details	Approved	
			Name/Position	Signature
0	01-Jul-2025	Final	[redacted] Associate Director	[redacted]

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Abbreviations

Abbreviation	Term
AECOM	AECOM Australia Pty Ltd
ALS	ALS Environmental Pty Ltd
AS/NZ	Australian/New Zealand Standard
COC	Chain of Custody
CSM	Conceptual Site Model
DCMM	Defence Contamination Management Manual
Defence	Department of Defence
DO	Dissolved Oxygen
DoH	Department of Health
DQO	Data Quality Objectives
DQI	Data Quality Indicators
DSI	Detailed Site Investigation
EC	Electrical Conductivity
FSA	Fire Station Area
FTA	Fire Training Area
HEPA	Heads of Environment Protection Authority
LOR	Limit of Reporting
MW	Monitoring Well
NATA	National Association of Testing Authorities
NEMP	National Environmental Management Plan
NHMRC	National Health and Medical Research Council
NMI	National Measurement Institute
NT	Northern Territory
NSW	New South Wales
OMP	Ongoing Monitoring Plan
OMR	Ongoing Monitoring Report
PFAS	Per- and poly-fluoroalkyl substances
PFHxS	Perfluorohexanesulfonic acid
PFOA	Perfluorooctanoic acid

Abbreviation	Term
PFOS	Perfluorooctanesulfonic acid
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance and Quality Control
RAAF	Royal Australian Air Force
RPD	Relative percentage difference
SAQP	Sampling and Analysis Quality Plan
SER	Sampling Event Report
SW	Surface Water

List of Units

Unit	Definition	Unit	Definition
^{o}C	Degrees Celsius	mg	Milligrams
cm	Centimetre	mV	Millivolts
L	Litre	µg	Micrograms
m	Metre	µS	Microsiemens
mAHD	metres Australian Height Datum	mbTOC	metres below top of casing

1.0 Introduction

1.1 Preamble

AECOM Australia Pty Ltd (AECOM) was engaged by the Department of Defence (Defence) in January 2022 to implement the per- and poly-fluoroalkyl substances (PFAS) Management Action Plan (PMAP) (Defence, 2019a), for Royal Australian Air Force (RAAF) Base Tindal ('the base'). Collectively the PMAP implementation comprises a number of services which will collectively be referred to as the 'project' hereafter.

The location of the base with respect the nearby township of Katherine, Northern Territory (NT) is shown on **Figure F1 (Appendix A).**

The key objectives of the project (in its entirety) are to:

- Implement practicable solutions to prevent or minimise the migration of PFAS beyond the Defence property boundary by addressing significant source area/pathways on the base
- Ensure the proposed and implemented remedial strategies have measurable and demonstratable results.

The project has been split into five Service Packages, with Service Package 4 (Ongoing Monitoring Plan [OMP] Services) being relevant to this Dry Season 2024 Sampling Event Report (SER). Wet season sampling is also undertaken under this Service Package, although the data and outcomes are reported separately.

The primary purpose of the OMP (comprising both dry and wet season sampling) is to monitor changes to the PFAS impact in groundwater and surface water pathways associated with the key sources of PFAS on base, as initially identified and assessed through the detailed site investigation (DSI) phase of works (Coffey, 2018a) (Coffey, 2018b). Changes in PFAS impact may result from the base-specific or cumulative influence of remediation or containment actions, transportation trends, and / or changes to hydrogeology or climatic conditions. Identified changes to PFAS impact originating from the base can inform risk management decisions taken by Defence and Territory agencies to protect human health and the environment. At the end of 2025, an ongoing monitoring report is to be prepared that assesses the complete data set collected during the discrete monitoring events completed over the 12-month period. This annual assessment will consider environmental variability and statistically significant trends in PFAS concentrations.

The seasonal monitoring program at the base includes a regime of groundwater, surface water and biota sampling to evaluate these changes in the long term, to enable Defence to maintain an up-to-date understanding of temporal and spatial distribution, concentration, and transport of PFAS. The data collection requirements which were adopted for the project are documented in the Sampling Analysis and Quality Plan (SAQP) Revision 6 (AECOM, 2023)**.**

The most recent PFAS OMP approved in October 2021 (Defence, 2021a)**,** outlines the requirement to conduct biota sampling (once per year), groundwater sampling for private bores (monthly during the wet season and once during the dry season), annual or biannual monitoring of other groundwater locations on- and off-base, and quarterly surface water sampling (up to four times a year) also on- and off-base, as presented in **Table 1** below.

Table 1 OMP sampling schedule with dry season sampling highlighted in yellow.

Sampling	Wet Season						Dry Season					
	Early		Mid		Late		Early		Mid		Late	
	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24
Ground-water	Monthly in Wet	Monthly in Wet	Monthly in Wet	Monthly in Wet	Monthly in Wet	Monthly in Wet						Once in Dry
												Annual
					Biannual						Biannual	
Surface Water	Quarterly		Quarterly			Quarterly			Quarterly			Quarterly
											Annual	
					Biannual						Biannual	
	Twice in Wet				Twice in Wet							
Aquatic Biota											Annual	

1.2 Objective

The purpose of this SER is to summarise the scope of works and findings from the dry season sampling works conducted between May 2024 through to October 2024 in accordance with the SAQP (AECOM, 2023). This report has been prepared in accordance with the Defence's PFAS OMP Reporting Guidance, (Defence, 2024).

An annual ongoing monitoring report (OMR) will be subsequently developed for the purpose of assessing the data collected during May 2024 through April 2025.

2.0 Scope of Works

2.1 Overarching Scope

The groundwater, surface water and biota sampling works described herein were completed in general accordance with the SAQP (AECOM, 2023), where deviations arose, these are listed with the significance of the consequence described in **Section 2.3** below. Prior to sampling, the SAQP was reviewed to ensure compliance with the following:

- the OMP (Defence, 2021a)
- Heads of the Environment Protection Authority (HEPA), PFAS National Environmental Management Plan (NEMP 3.0) (HEPA, 2025)
- National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended 2013 (ASC NEPM, 2013)
- Defence Routine Environment Water Quality Monitoring Manual (Defence, 2019b)
- Australian/New Zealand Standard (AS/NZ) 5667:1998 Water quality – Sampling (AS/NZS, 1998)
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018)**.**

The planned scope of works for the dry season 2024 monitoring period that is outlined in the SAQP (AECOM, 2023) includes:

- Collection of 27 annual groundwater samples in October 2024 from on- and off-base locations.
- Collection of three biannual groundwater samples in September or October 2024 from off-base locations.
- Collection of 18 ‘once in dry season’ groundwater samples in October 2024 from off-base private property locations.
- Collection of a biota samples from two sampling areas along Katherine River in September or October 2024.
- Collection of three biannual surface water samples in October 2024 from off-base locations.
- Collection of three quarterly surface water samples in October 2024 from off-base locations.
- Collection of one annual surface water sample in October 2024 from an off-base location.
- Collection of relevant quality assurance and quality control (QA/QC) samples as per the SAQP (AECOM, 2023)
- Analysis of samples included the 28 analyte PFAS-suite (full suite) at the standard limit of reporting (LOR)
- Data management of the OMP field and laboratory data in the Defence ESdat database in accordance with Defence’s Contamination Management Manual (DCMM) (Defence, 2021b) Annex L requirements.
- Preparation of this Dry Season 2024 SER.

2.2 Monitoring Locations

The monitoring locations outlined within the SAQP (AECOM, 2023) for the dry season sampling events are tabulated below. Deviations from the planned sampling are highlighted in **bold** and detailed in **Section 2.3** below.

Table 2 Quarterly surface water sampling locations – June and October 2024 (Figure F2 through to F5 in **Appendix A)**

Area	Description	SAQP Locations
Off-base	Katherine River	SW108, SW153,

Area	Description	SAQP Locations
	Stuart Highway	**OTH008**

Table 3 Biannual surface water sampling locations – October 2024 (Figure F4 and F5 in **Appendix A)**

Area	Description	SAQP Locations
Off-base	Katherine River	SW100, SW110, SW161

Table 4 Annual surface water sampling locations – October 2024 (Figure F4 and F5 in **Appendix A)**

Area	Description	SAQP Locations
Off-base	Katherine River	SW151

Table 5 "Once in dry season" private bore groundwater sampling locations – October 2024 (Figure F6 and F7 in **Appendix A)**

Area	Description	SAQP Locations
Off-base	Shadforth Road	POT114[1], POT120, POT124, POT130, OTH117
	Zimin Drive	POT112, POT113, POT121[1], POT125, POT126, POT127, POT128, POT129, OTH118, OTH119[1], OTH118, POT131
	Tokmakoff	POT198[1], POT201

1 Not presented in Figure F2 - **Appendix A** for privacy reasons.

Table 6 Annual groundwater sampling locations – October - December 2024 (Figure F8 through to F10 in **Appendix A)**

Area	Description	SAQP Locations
On-base	Fire Training Area (FTA)	MW104, MW231, **MW235**
	Fire Station Area (FSA)	MW127, MW129, MW149
	Fuel Farm 1	MW278
	Fuel Farm 2	MW285
	Mechanical Equipment Operations Maintenance Section	MW244
	Married Quarters	OTH111
	75 Squadron	OTH112
	Source area downgradient transect	MW107, MW110, **MW403**
	Western Base boundary	**MW117**
Off-base	Katherine Research Station	**MW134**, MW135
	Katherine East	MW137
	Katherine East centre of plume	**MW138**, MW140
	Collins Road	MW400
	Morris Road	OTH115
	Adjacent to Katherine River – upstream	OTH113

Area	Description	SAQP Locations
	Gorge Road	**POT119**
	Uralla Road	POT111
	Adjacent to Katherine River – downstream	MW144
	Adjacent to Katherine River	MW142

Table 7 Biannual groundwater sampling locations – October 2024 (Figure F9 and F10 in **Appendix A)**

Area	Description	SAQP Locations
Off-base	Town Council	OTH114
	Emungalan	OTH120
	Arndt Road	**POT122**

Table 8 Annual biota sampling locations –October 2024 (Figure F11 in **Appendix A)**

Area	Description	SAQP Locations
Off-base	Katherine River	Galloping Jacks (BIO078) and Down Stream Stuart Highway (BIO088)

2.3 Deviations from the SAQP

The biannual, annual and quarterly surface water events included some deviations from the SAQP (AECOM, 2023) as outlined in **Table 9.**

Table 9 Surface water deviations from the SAQP during the October - December 2024 sampling event

SAQP	Deviation	Impact on OMP
Collection of water quality parameters from surface water sampling locations	Water quality parameters were not collected at SW151, which is collected during the aquatic biota sampling event.	Minor impact – a review of historical water quality parameter data indicated that there is minimal variance in parameter readings across the four Katherine River sampling locations, therefore collection from the other three locations should provide sufficient data for interpretive purposes.
Collection of three quarterly surface water samples	OTH008 - the local public swimming pool, was unable to be accessed due to the facility being closed for renovations.	No impact to the program as sample collection from OTH008 monitors for potential health risks from PFAS within the swimming pool, therefore there are no risks to the public while the pool is not in operation.

The annual and biannual groundwater events included deviations from the SAQP (AECOM, 2023) as outlined in **Table 10** below.

Table 10 Groundwater deviations from the SAQP during the October - December 2024 sampling events

SAQP	Deviation	Impact on OMP
Gauging and sample collection of 28 annual groundwater locations	23 annual groundwater locations were sampled. Five annual groundwater locations (or their SAQP listed alternative) were not able to be sampled: • MW117 presented as dry and it's SAQP listed alternative, MW118, was also dry • MW134 could not be sampled due to root blockage • MW138 could not be sampled due to root blockage • MW235 was not able to be sampled as it was decommissioned prior to soil remediation works commencing at the former FTA. The SAQP does not list a suitable alternative well and recommends replacing well if not able to be sampled. • POT119, AECOM have not been able to obtain a signed access letter from the owner since April 2021. A new groundwater monitoring well has been installed in November 2024 to substitute data historically collected from POT119.	MW117 – Potential data gap for concentrations of PFAS on the western boundary track. MW130 (long screened interval like MW117) to the north was able to be sampled, reducing the impact of this data gap (2 km spatial data gap). MW117 and MW130 overlap in screen intervals from 1 to 14.5 metres below ground level (m bgl).
		MW134 – Potential data gap for concentrations of PFAS north-west of the plume. MW135 (long screened interval like MW134) to the north was able to be sampled, reducing the impact of this data gap. MW134 and MW135 are screened the same from 2.5 to 19 m bgl. This well has been subsequently repaired with sampling to resume at this location during the 2025 end of wet season monitoring event.
		MW138 – Potential data gap for concentrations of PFAS centre of the plume. However, MW137 (long screened interval like MW138) to the north was able to be sampled, reducing the impact of this data gap. MW138 and MW137 are screened the same from 2 to 18 m bgl. This well has been subsequently repaired with sampling to resume at this location during the 2025 end of wet season monitoring event.
		MW235 – minimal data gap. MW235 has been decommissioned and is recommended to be removed from the OMP due to the location being within the PMAP Soil RAP remediated area and drilling a new well may compromise the cap. Current focus at the FTA is groundwater remediation through a pump and treat system and monitoring PFAS discharge through groundwater from the FTA source area. Installation of additional monitoring wells is currently under review.

SAQP	Deviation	Impact on OMP
		Significant data gap - POT119 is a sentinel well along the northern in northern boundary of the plume, along Gorge Rd where PFAS have been below the LOR. A replacement monitoring well (MW815) has been installed near this sampling location on public land to address this data gap, however, the new well was not installed prior to this sampling event. The newly installed well will be sampled during the next event in February-March 2025. It is recommended to add as a replacement location for POT119 in the next revision of the SAQP and OMP.
Alternative location sampled for one annual groundwater locations.	MW734 was impacted by roots and unable to be sampled. It's SAQP prescribed alternative (MW132) was also impacted by roots and unable to be sampled. Nearby location MW133 was sampled as an alternative.	MW734 – Minimal data gap as MW133 (long screened interval like MW734) was able to be sampled instead to monitor the concentrations of PFAS on the western base boundary. MW734 and MW133 overlap in screened intervals from 3.2 to 19.7 m bgl. MW734 continues to be screened to 80.9 m bgl. However, as PFAS tends to concentrate within the vadose zone, results from MW133 can be used to minimise the data gap from not sampling MW734. The intent of this cross-gradient well is to capture the northern plume boundary along the northern base boundary to ensure that concentrations remain low and risk to the community to north remain low.
Additional 19 groundwater locations gauged and/or sampled	MW136 is a groundwater monitoring well that is to be added to the upcoming OMP revision and therefore was included as part of the October-December 2024 monitoring event.	Additional data point - MW136 is located between the northern plume edge and nearby private bore users. Sampling from this location as part of the OMP will increase the resolution of the sentinel well network in tracking PFAS migration that could potentially impact nearby private bore users.
	MW118I, MW118D, MW119, MW130, MW131 are planned to be added to the upcoming OMP revision and were therefore included as a part of the October - December 2024 monitoring event.	Additional data points - These wells will monitor PFAS mass flux across the base boundary as they are located on the plume centreline and add overall data resolution to the program.

SAQP	Deviation	Impact on OMP
		MW119 was recorded as dry so not sampled on this occasion.
	MW106 and MW801S are planned to be added to the upcoming OMP revision and were therefore included as a part of the October - December 2024 monitoring event.	Additional data points - These wells will monitor PFAS mass flux downgradient of the former FTA on the base boundary, providing additional monitoring locations to track changes in PFAS concentrations in groundwater resulting from completed soil remediation works.
	MW109, MW109D, MW111 and MW111D are to be added to the upcoming OMP revision and therefore was included as part of the October-December 2024 monitoring event.	Additional data points - These wells will monitor PFAS mass flux downgradient of the FSA on the base boundary, providing additional monitoring locations to track changes in PFAS concentrations in groundwater resulting from completed soil remediation works.
	MW146, MW802S, MW802I and MW802D are planned to be added to the upcoming OMP revision and were therefore included as a part of the October - December 2024 monitoring event.	Additional data points - These wells will monitor the PFAS concentrations in the FSA source area.
	MW803S, MW803I and MW803D are planned to be added to the upcoming OMP revision and were therefore included as a part of the October - December 2024 monitoring event.	Additional data points - These wells will monitor PFAS concentrations in the former FTA source area.
Collection of three biannual groundwater samples	POT122 was not able to be sampled. AECOM have not been able to gain access to the property since January 2022. A new groundwater monitoring well has been installed in November 2024 (MW814) to substitute data historically collected from POT122.	Significant data gap - POT122 tracks PFAS contamination in groundwater in the Emungalan area west of Katherine River where known PFAS impacts have been previously documented. A replacement monitoring well has been installed near this sampling location to address this data gap, however, the new well was not installed prior to this sampling event. The newly installed well will be sampled during the next biannual event in February-March 2025. It is recommended to add as a replacement location for POT122 in the next revision of the SAQP.
Collection of annual groundwater samples within the end of dry season	MW403 data point to be used for interpretation was collected in December 2024:	Minor impact –MW403 was technically collected during the 'start of wet season' (December 2024) rather than the 'end of wet season' (September-

SAQP	Deviation	Impact on OMP
months (September-October)	MW403 (off-base) results from October 2024 reported a new exceedance (1.34 µg/L) of the drinking water guideline for the Sum of Perfluorooctanesulfonic acid and Perfluorohexanesulfonic acid (PFOS+PFHxS). This result was an order of magnitude greater than the historical data collected at this location. The monitoring well was re-sampled on 9 December 2024 and reported a concentration of 0.02 µg/L which is consistent with historical results. Consequently, the initial MW403 concentrations are excluded from further consideration and are replaced with the December 2024 reported concentrations.	October months), results from the December sampling are still expected to reflect the dry seasons conditions. A review of groundwater elevations was conducted between the two sampling events was conducted to determine the appropriateness of using data collected in December as a part of the dry season data set. Groundwater levels increased by 0.229 m AHD between events, indicating that early wet season rain events did have a minor impact on water levels at MW403. However, it is not anticipated that the observed change in groundwater level would have diluted PFAS concentrations back to historical levels within the time between when samples were collected.
Use of National Institute of Measurement (NMI) Sydney as secondary laboratory	During the October 2024 event, National Association of Testing Authorities (NATA) accredited laboratory ALS Environmental Pty Ltd (ALS) Brisbane was used as secondary laboratory instead of NMI as per SAQP.	No impact - The intent of the secondary laboratory is to ensure the results are repeatable when conducted by a different laboratory using different equipment. This ensures both the collected samples and the laboratory equipment utilised provide similar results, indicating both the sample methods and the laboratory equipment are adequate for providing accurate results. Therefore, the use of ALS Brisbane instead of NMI as the secondary laboratory has no material impact on the resulting data quality.

The annual biota sampling event in October 2024 did not have any deviations from the SAQP (AECOM, 2023).

3.0 Sampling methodology

3.1 Adopted methodology

The methodologies adopted for the groundwater, biota and surface water were in accordance with the applicable revision of the SAQP (AECOM, 2023), noting that deviations in sampling locations have already been discussed in **Section 2.3** above.

Table 11 Groundwater and surface water sampling methodology

Item	Details
Groundwater and surface water methodology	
Groundwater gauging	Depth to groundwater and total depths were measured prior to collection of groundwater samples using a decontaminated oil/water interface probe. Gauging was performed where possible at monitoring wells, noting that extraction bores fitted with taps are not accessible for gauging.
Groundwater sample collection	Groundwater samples were collected from accessible monitoring wells using no-purge methodology HydraSleeves™, which were installed within the screened interval of the wells for a minimum of 24 hours prior to the sampling round. HydraSleeve™ positioning was based on a review of the well construction log and ~dropping either 3 m below the measured groundwater depth or one metre below the top of the screened section (whichever is deepest). Extraction bore water samples were collected from existing taps on the headworks of the extraction bore or from the closest accessible sampling point from the extraction bore. Samples were collected from the 'first-flush' from the tap.
Surface water sample collection	Surface water samples were collected from either mid-way through the water column or approximately 0.5 m below the surface, dependent on water depth, with care taken to minimise collection of sediment or floating materials in the samples. At each location, laboratory supplied bottles were lowered into the water using a decontaminated aluminium sampling pole with the cap immediately applied once the container was full and retrieved from the water.
Water quality parameters	Water quality parameters were recorded ex-situ, post-sample collection, using a YSI Pro Water Quality Meter. Water quality measurements recorded consisted of the following: temperature (°C), electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (reported as redox), and pH. Observations of odour, colour and clarity (low, moderate or high turbidity) of the samples collected were recorded at each location.
QA/QC samples	For water sampling, field QA/QC samples included intra-laboratory duplicate and inter-laboratory duplicates at a rate of 1 in 10 primary samples, rinsates at a rate of 1/day where decontaminated equipment was used, field blanks at a rate of 1/sampling day and trip blank samples at a rate of 1/cooler.
Sample analysis	Samples were submitted to the primary and secondary laboratories for PFAS analysis. ALS Sydney, New South Wales (NSW) was used as the primary laboratory. NMI of Sydney, NSW and ALS Brisbane was used as the secondary laboratories. ALS and NMI methods for analyses are certified by NATA.
Aquatic biota sampling	
Aquatic biota target samples	Target species for each identified sample location were based on those that are recognised as consumed by the public from the following two groups:

Item	Details
	• Fish (Barramundi (Lates calcarifer), Sooty Grunter/ Black Bream (Hephaestus fuliginosus), Bony Bream (Nematalosa erebi), Butler's Grunter (Syncomistes butleri), Mullet (Planiliza ordensis)), Archerfish (Toxotes chatareus), Sleepy Cod (Oxyeleotris lineolata), Black Catfish (Neosilurus ater), and Blue Catfish (Neoarius graeffei)) • Crustaceans (Cherabin (Macrobrachium spinipes)).
Aquatic biota sampling methodology	Sampling was conducted by Eco Logical Australia Pty Ltd and the Department of Fisheries (NT) on 15, 16 and 17 October 2024. Ethics approvals and Fisheries/Parks & Wildlife licenses were obtained prior to biota sample collection. Targeted fish and aquatic invertebrates were collected using an electrofishing boat, using methods that comply with the guidelines set out by the Australian Code of Electrofishing Practice. Stunning used the minimum power necessary to attract and stun the biota effectively. Electrofishing occurred for 5 – 10 minutes per pool, or until adequate samples were collected. Selected biotas were identified, measured, weighed and euthanized humanely according to the animal ethics permit conditions, and all non-target species were released from electrical current immediately. Samples were prepared for analysis at the Department of Fisheries laboratory prior to dispatching to the primary laboratory. This included the removal of scales/shell, head, and internal organs. Fillets were taken with skin intact and homogenised prior to sub-sampling and analysis. Samples were prepared based on the following procedure: • For Target fish: - Used opened bag as board cover - Cleaned knife/blade with deionised water - For large fish the complete tissue samples of edible flesh were collected - For smaller fish, samples were provided whole with entrails removed. • The weight, length, species, and location caught were recorded.
QA/QC samples	Field QA/QC samples collected included rinsate and intra- and inter-laboratory duplicates which are described as the following: • Rinsate samples were taken from decontaminated sample processing equipment (filleting knife) • Duplicates were taken from fin fish to ensure homogeneity for intra-laboratory analysis rather than composite samples of crustaceans.
Sample analysis	All samples collected were tested for the extended suite of PFAS. Samples were submitted to the primary laboratory for analysis in accordance with the SAQP (AECOM, 2023). ALS Sydney, NSW was used as the primary laboratory. ALS methods for analyses were certified by the NATA.

3.2 Adopted screening criteria

Screening criteria were selected on the basis of national guidance in the form of the PFAS National Environmental Management Plan, Defence estate and environmental strategies, and Defence PFAS-specific strategies and guidance. Guidance documents used to assess the dataset includes the following:

- Department of Health (DoH) Health Based Guidance Values for PFAS for use in site investigations in Australia (Department of Health, 2019)
- Heads of the Environment Protection Authority (HEPA), PFAS National Environmental Management Plan (PFAS NEMP 3.0) (HEPA, 2025)

- National Health and Medical Research Council (NHMRC), Guidance on PFAS in Recreational Water (NHMRC, 2019).
- National Environment Protection (Assessment of Site Contamination) Measure 1999, Schedule B1, (ASC NEPM, 2013).

A summary of screening criteria used for groundwater and surface water matrices are presented in **Table 12** below.

Table 12 Summary of adopted screening criteria for surface water and ground water

Pathway	Compound	Criteria	Comment/reference
Human health receptors			
Drinking water	PFOS+PFHxS	0.07 micrograms per litre (µg/L)	These values are from the PFAS NEMP 3.0 (HEPA, 2025).
	Perfluorooctanoic acid (PFOA)	0.56 µg/L	
Recreational use	PFOS+PFHxS	2 µg/L	These values are from PFAS NEMP 3.0 (HEPA, 2025).
	PFOA	10 µg/L	
Ecological receptors			
Freshwater 99% species protection	PFOS	0.00023 µg/L	These values are from the PFAS NEMP 3.0 (HEPA, 2025). *The 99% level of protection has been applied for slightly to moderately disturbed ecosystems. This approach is generally adopted for chemicals that bioaccumulate and biomagnify in wildlife. For the purposes of preliminary screening of analytical water results, the laboratory LOR will be adopted rather than sole use of the criteria value.*
	PFOA	19 µg/L	

The drinking water guideline value has been applied to surface water as the town water supply is partially sourced from surface water from the Katherine River, and the interaction between surface and groundwater due to groundwater expressing through springs and surface water infiltrating into groundwater through sinkholes. The recreational water guideline value has also been applied to groundwater due to groundwater expressing through springs and the use of groundwater extraction for irrigation and recreational use such as the filling of private swimming pools and potentially public swimming pools.

Further to the adopted screening criteria, the OMP (Defence, 2021a) outlines site-specific trigger points that data is to be reviewed against. The OMP triggers are summarised in **Table 13** below, with recommended actions (if triggers are met) outlined in the OMP (Defence, 2021a).

Table 13 OMP Trigger Points

Locations	Trigger Point
Groundwater locations previously below laboratory LOR for PFAS	First time detection of PFAS compounds in groundwater
All monitoring locations (groundwater, surface water or biota)	PFOS+PFHxS and/or sum of PFAS concentrations show an increasing trend (using statistical analysis) over two years of monitoring or increase by >30% in one year.

Locations	Trigger Point
	PFOS+PFHxS and/or sum of PFAS concentrations show decreasing trend (using statistical analysis) over two years of monitoring or decrease by >30% in one year.
All groundwater monitoring locations	Groundwater monitoring well is not able to be sampled as it is dry, blocked, damaged, decommissioned, inaccessible, lost etc.
Groundwater private bores in Cossack and Emungalan	PFOS+PFHxS and/or sum of PFAS concentrations in a bore show an increasing trend (using statistical analysis) over two years of monitoring or increase by >30% in one year. Or, concentrations are reported above the adopted drinking water health-based screening level.
Groundwater private bore on Uralla Road (POT111)	Concentrations of PFAS are reported in POT111 which indicate an increase in plume size or concentrations above drinking water guidelines.
Groundwater private bore on Gorge Road (POT119)	Detectable concentrations of PFAS are reported in POT119.
MW734	PFOS+PFHxS and/or sum of PFAS concentrations at MW734 show an increasing trend (using statistical analysis (over two years of monitoring or increase by >30% in one year.

If sample points meet any of the triggers listed above, the sample has been highlighted in blue (first time detection of PFAS) or yellow (new exceedance of human health criteria) in analytical tables, found in **Appendix B.** Additional trigger points in relation to trend analysis are listed in the OMP (Defence, 2021a). These trigger points are taken into consideration during the annual OMR.

Additional trigger points in relation to trend analysis are listed in the OMP (Defence, 2021a). These trigger points are taken into consideration during the annual OMR.

Table 14 Summary of adopted screening criteria for consumption of aquatic biota

Pathway	Compound	Criteria	Comment/reference
Human health receptors			
Crustaceans	PFOS and PFOS+PFHxS	65 (µg/kg)	Department of Health (2019) *Derivation: Children 2-6 years, median consumption* Occasionally consumed food. Trigger criteria for investigation for crustaceans apply to molluscs due to the small number of consumers of molluscs.
	PFOA	520 µg/kg	
Finfish	PFOS and PFOS+PFHxS	5.2 µg/kg	Department of Health (2019). *Derivation: Children 2-6 years, P90 consumption*

3.3 Data quality objectives and data validation

The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2023)**.**

The data validation report is provided in **Appendix D**.

The analytical data can be used as a basis for interpretation, subject to the limitations outlined below:

- The potential exists for concentrations of PFOS to be below the laboratory LOR, but above the PFOS and PFOA Freshwater 99% Species Protection guidelines in all groundwater and surface water samples, with the exception of groundwater sample 0990_POT120_230726 which reported a PFOS concentration above the LOR and adopted guideline and should be taken into consideration when interpreting results.

- MW403 reported a new exceedance (1.34 µg/L) of the drinking water guideline for PFOS+PFHxS. This result was an order of magnitude greater than the historical data collected at this location and therefore this anomaly conflicted with the groundwater conceptual site model (CSM). The reported PFAS concentrations were suspected to be inaccurate as a result of either errors in laboratory testing or field sampling. The source of the potential error could not be determined with certainty and therefore the well was re-sampled on 9 December 2024 and reported a concentration of 0.02 µg/L which is consistent with historical results from this location collected since 2017. A review of groundwater elevations was conducted between the two sampling events was conducted to determine the appropriateness of using data collected in December as a part of the dry season data set. Groundwater levels increased by 0.229 m AHD between events, indicating that early wet season rain events did have a minor impact on water levels at MW403. However, it is not anticipated that the observed change in groundwater level would have diluted PFAS concentrations back to historical levels within the time between when samples were collected.
- The surface water and groundwater monitoring events were completed in conjunction with an ad-hoc groundwater sampling event which has been reported separately. Parent samples for the field intra-laboratory and inter-laboratory duplicates reflect these ad-hoc locations. The data validation has been assessed as an all-inclusive event.
- The elevated RPD suggests that concentrations of PFOS in the primary laboratory batch, ES2434947, may be biased high by up to 78 %. However, elevated RPDs are expected in biota due to the heterogeneous distribution of PFAS in the matrix type. As a conservative approach, the higher concentrations have been used for assessment against criteria.

Data validation procedures employed in the assessment of the field and laboratory QA/QC data are indicative that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report. An examination of sampling analysis data compared to the data validation findings did not result in any results that required flagging for potential inaccuracies.

All data collected during these events has been reviewed and uploaded to the Defence ESdat database in accordance with DCMM (Defence, 2021b) Annex L requirements.

4.0 Results and discussion

4.1 Surface water

4.1.1 Surface water field observations and measurements

Table 15 Surface water observations and field measurements for October - December 2024 sampling events.

Compound	Criteria
Fieldwork dates	The biannual and quarterly surface water sampling occurred on 30 October and 1 November 2024. One annual surface water location (SW151) was sampled earlier on 16 October 2024 in conjunction with the biota sampling.
Access and sample collection	All annual and biannual surface water sampling locations were accessible and sampled. One quarterly surface water location, OTH008, was unable to be accessed due to the facility being closed for renovations.
Field observations	Katherine River generally had moderate flows with low turbidity, no odour or sheen. The Katherine Hot Springs was noted to be colourless with moderate flow, low turbidity, no odour and no sheen.
Surface water level	The Katherine River level was recorded as being at approximately 0.236 m on 16 October 2024 and 0.265 m on 30 October July 2024 at the Katherine River Railway Bridge, recorded from Station G814001 (Northern Territory Department of Lands, Planning and Environment, 2024)**.**
Water quality measurements	Stabilised water quality parameter readings are presented in **Table T1 - Appendix B** and are summarised below per event below, excluding the annual surface water sample in which parameters were not collected: **Biannual event October - December 2024:** • DO ranged from 5.33 mg/L (SW161) to 7.18 mg/L (SW100) indicating oxygenated water • EC ranged from 79.3 µS/cm (SW161) to 586 µS/cm (SW100) indicating freshwater conditions • pH ranged from 5.27 (SW100 and SW110) to 5.34 (SW161) indicating acidic conditions • Redox (corrected) ranged from 305.6 mV (SW161) to 351.0 mV (SW100) indicating oxidising conditions. **Quarterly event October 2024:** • DO ranged from 4.45 mg/L (SW153) to 5.96 mg/L (SW108) indicating oxygenated water • EC ranged from 470.9 µS/cm (SW108) to 683 µS/cm (SW153) indicating freshwater conditions • pH ranged from 5.13 (SW153) to 5.27 (SW108) indicating acidic conditions • Redox (corrected) ranged from 337.5 mV (SW108) to 353.4 mV (SW153) indicating oxidising conditions.

4.1.2 Surface water analytical results

Analytical results from the annual, biannual and quarterly surface water sampling events were consistent with the historical data set. Discussion of any deviations from the SAQP that occurred are presented in **Section 2.3**. There were no OMP trigger point exceedances from these results.

The PFAS surface water analytical results from the October - December 2024 sampling events are presented in **Table T2 - Appendix B**.

4.2 Groundwater results

4.2.1 Groundwater field observations and measurements

Table 16 Groundwater field observations and measurements

Compound	Observation and field measurements
Fieldwork dates	The annual groundwater sampling was completed between 15 October 2024 and 1 November 2024, with one location (MW403) re-sampled on 9 December 2024. The biannual and 'once in dry season' groundwater sampling was completed between 15 October and 30 October 2024.
Access and sample collection	All groundwater samples were collected as per the SAQP (AECOM, 2023) with the exception of the deviations listed in **Section 2.3** above. One annual groundwater sample location (MW403) recorded a new exceedance of the selected human health criteria which triggered a resample of groundwater at this location approximately 5 weeks later (completed in December 2024). Both results are shown in analytical tables and are explained further in **Section 4.2.2** below.
Water quality measurements	Water quality measurements were taken during sample collection using a YSI Pro Water Quality Meter. Stabilised readings are presented in **Appendix B.** **Annual event October – December 2024 (Table T5a)**: • DO ranged from 0.53 mg/L (MW136) to 5.34 mg/L (POT111 – extraction bore) indicating hypoxic to oxygenated water. • EC ranged from 225.6 µS/cm (MW231) to 1577 µS/cm (MW802S) indicating fresh to slightly brackish water conditions • pH ranged from 5.24 (MW140) to 7.23 (MW802S) indicating acidic to neutral conditions • Redox (corrected) ranged from 162.6 mV (MW244) to 393.8 mV (MW136) indicating oxidising conditions. **Biannual event October 2024 (Table T5a)**: • DO ranged from 2.11 mg/L (OTH114) to 5.57 mg/L (OTH120) indicating oxygenated water conditions • EC ranged from 682 µS/cm (OTH120) to 748 µS/cm (OTH114) indicating freshwater conditions • pH ranged from 5.08 (OTH114) to 5.39 (OTH120) indicating acidic conditions • Redox (corrected) ranged from 321.4 mV (OTH120) to 346.5 mV (OTH114) indicating oxidising conditions. **"Once in dry season" private bore event October 2024 (Table T5b)**: • DO ranged from 2.29 mg/L (POT127) to 9.162 mg/L (POT128) indicating oxygenated water conditions • EC ranged from 691 µS/cm (POT120) to 1027 µS/cm (POT127) indicating freshwater conditions • pH ranged from 5.08 (OTH114) to 7.74 (POT121) indicating acidic to near neutral conditions • Redox (corrected) ranged from 213.8 mV (POT114) to 367.4 mV (POT120) indicating oxidising conditions.

Compound	Observation and field measurements
Groundwater levels	During the annual sampling event in October – December 2024, groundwater levels were measured from monitoring wells only, as sampled extraction bores do not permit access for groundwater level measurements. Standing water levels ranged from 4.0 metres below top of casing (mbTOC) (MW146) to 17.9 mbTOC (MW135). Groundwater elevations were then calculated using available top of casing elevation data in metres above Australian Height Datum (mAHD) and ranged from 89.5 mAHD (MW137) to 137.2 mAHD (MW149). Elevations are presented in **Table T5a - Appendix B** and inferred that groundwater flows from east to west, towards Katherine Township and River.

4.2.2 Groundwater analytical results

Analytical results from the annual, biannual and 'once in dry season' private bore sampling events were consistent with the historical data set, with further discussion of any deviations from the SAQP (AECOM, 2023) that occurred in **Section 2.3**. Only one location met an OMP trigger point criteria as shown below in **Table 17.**

Table 17 Locations that meet OMP trigger criteria

OMP Trigger	Location ID	PFOS+PFHxS concentration (µg/L)
		Dry season 2024
Exceedance of human health criteria for sum of PFHxS+PFOS and/or PFOA in Cossack private property bores	POT112 (Oct-24)	0.18

POT112 has consistently reported concentrations of PFOS+PFHxS above the LOR since its first sampling in November 2017, ranging between 0.02 µg/L (April 2024) and 0.14 µg/L (January 2024). The first time POT112 reported above the human health drinking water guidelines (0.07 µg/L) was April 2021. Since then, POT112 has sporadically reported above the drinking water guidelines, usually during late wet season months when the water table is high. As per the recommended trigger points actions outlined in the OMP (Defence, 2021a), provision of alternative water supply has been arranged, and the landowner has been informed of the risks of utilising the bore water for drinking.

Monitoring locations with reported PFOS+PFHxS concentrations above their assigned PMAP (Defence, 2019a) designated management zone concentrations ranges for groundwater are presented in **Table 18.** The management zone ranges are shown in **Figure F1 – Appendix A.**

Table 18 Locations reported PFOS+PFHxS concentrations above the PMAP (Defence, 2019a) designated management zones ranges.

Assigned Zone	Private Property Event October 2024	Annual Event October 2024
1 – Groundwater > Recreation Drinking Water Criteria (2 µg/L)	Nil	MW400 (2.21 µg/L)
2 – Groundwater > Drinking Water Criteria (0.07 µg/L)	Nil	Nil
5 – Groundwater < Criteria (<0.07 µg/L)	POT112 (0.18 µg/L)	Nil

The groundwater analytical results from the three dry season sampling events are presented in **Table T4 - Appendix B.**

4.3 Biota

4.3.1 Field observations and field measurements

Table 19 Biota observations

Item	Observation
Field Observations	Sample descriptions were provided by NT Fisheries field staff following the biota sampling event via an excel spreadsheet, noting fauna group, species type and weight. These are presented in **Table T7 - Appendix B**.
Access and Sample Collection	All monitoring locations were accessible, and 40 samples were able to be collected and analysed. Fish and invertebrate species collected and analysed included: BIO088 (Katherine River - downstream of Stuart Hwy): • Barramundi (Lates calcarifer) • Sooty Grunter / Black Bream (Hephaestus fuliginosus) • Mullet (Planiliza ordensis) • Sleepy Cod (Oxyeleotris lineolata) • Bony Bream (Nematalosa erebi) • Cherabin (Macrobrachium spinipes) BIO078 (Katherine River – Galloping Jacks): • Barramundi (Lates calcarifer) • Sooty Grunter / Black Bream (Hephaestus fuliginosus) • Mullet (Planiliza ordensis) • Bony Bream (Nematalosa erebi) • Sleepy Cod (Oxyeleotris lineolata) • Blue Catfish (Neoarius graeffei) • Black Catfish (Neosilurus ater) • Cherabin (Macrobrachium spinipes)

4.3.2 PFAS biota analytical results

Analytical results from the annual biota sampling events were consistent with the historical data set, with further discussion of any deviations from the SAQP that occurred in **Section 2.3**. There were no OMP trigger point exceedances from these results. The annual biota analytical results are presented in **Table T7 - Appendix B**.

5.0 Summary and next sampling events

5.1 Summary of monitoring events

Findings of the dry season 2024 monitoring period and recommended actions are summarised in **Table 20** below with OMP trigger conditions and recommended actions summarised in **Table 21.**

Table 20 Summary of sampling event

Item	Comment	Recommended Actions
28 annual groundwater locations were sampled in October 2024	23 or 28 locations were sampled. Five locations were not able to be sampled due reasonings outlined in **Table 21** below.	See below OMP trigger point recommendations.
Annual location MW403 was resampled in December 2024 to confirm results.	Results for MW403 (off-base) from October 2024 reported a new exceedance (1.34 µg/L) of the drinking water guideline for the PFOS+PFHxS. This result was an order of magnitude greater than the historical data collected at this location.	The monitoring well was re-sampled on 9 December 2024 and reported a concentration of 0.02 µg/L which is consistent with historical results. Consequently, the initial MW403 concentrations are excluded from further consideration and have been replaced with the December 2024 reported concentrations. Continue monitoring MW403 in accordance with the SAQP and PMAP.
An additional 19 groundwater locations were added to the annual event	The following locations were also visited during the annual groundwater event: • MW106 • MW109 • MW109D • MW111D • MW111 • MW118D • MW118I • MW118 • MW130 • MW131 • MW136 • MW146 • MW801S • MW802D • MW802I • MW802S • MW803D • MW803I • MW803S	It is recommended to add these locations to the next revision of the OMP and therefore the SAQP.
Two of three biannual groundwater samples were collected in October 2024.	POT122 was not able to be sampled. AECOM have not been able to gain access to the property since January 2022. A new groundwater	Continue monitoring groundwater from this area in accordance with the SAQP and PMAP. Monitoring location MW814 is planned to

Item	Comment	Recommended Actions
	monitoring well, in publicly accessible land. has been installed in November 2024 (MW815) to provide an accessible location to collect data historically collected from POT122.	replace POT122 in the next revision of the OMP and SAQP.
18 'once in dry season' groundwater samples were collected in October 2024.	Nil	Continue monitoring in accordance with the SAQP and PMAP.
Biota samples were collected from two locations along Katherine River in October 2024.	Nil	Continue monitoring in accordance with the SAQP and PMAP.
Two of three quarterly surface water samples were collected in October 2024.	The Katherine Town Pool (OTH008) has been closed for renovations for the past three events. As this location monitors for potential health risks from PFAS within the swimming pool, there are no potential risk to the public while the pool is not in operation.	OTH008 will be sampled upon completion of the facility renovations. Continue monitoring in accordance with the SAQP and PMAP.
Three biannual surface water samples were collected in October 2024	Nil	Continue monitoring in accordance with the SAQP and PMAP.
One annual surface water sample was collected in October 2024	Nil	Continue monitoring in accordance with the SAQP and PMAP.

Table 21 OMP trigger point

Trigger Point	Comment	Recommended Actions
First time detection of PFAS compounds in groundwater.	There were no first-time detections above the LOR for PFOS+PFHxS or PFOA in groundwater or surface water.	Continue monitoring in accordance with the SAQP and PMAP.
PFOS+PFHxS and/or sum of PFAS concentrations show an increasing trend (using statistical analysis) over two years of monitoring or increase by >30% in one year.	This will be evaluated in the annual OMR using statistical analysis.	Continue monitoring in accordance with the SAQP and PMAP.
PFOS+PFHxS and/or sum of PFAS concentrations show decreasing trend (using statistical analysis) over two years of monitoring or decrease by >30% in one year.	This will be evaluated in the annual OMR using statistical analysis.	Continue monitoring in accordance with the SAQP and PMAP.

Trigger Point	Comment	Recommended Actions
Groundwater monitoring well is not able to be sampled as it is dry, blocked, damaged, decommissioned, inaccessible, lost etc.	There were five annual groundwater locations that were not sampled: 1. MW117 presented as dry and it's SAQP listed alternative, MW118, was also dry 2. MW134 could not be sampled due to root blockage 3. MW138 could not be sampled due to root blockage 4. MW235 was not able to be sampled as it was decommissioned prior to soil remediation works commencing at the former FTA. POT119 could not be sampled due to not being able to obtain a signed access letter from the owner. This is consistent with previous annual events with the last time POT119 being sampled was April 2021.	1. Root blockages at MW134 and MW138 have since been cleared during a drilling program in November 2024. Continue monitoring in accordance with the SAQP and PMAP. An attempt will be made to unblock the well during the next annual event. 2. MW117 is a shallow well and is consistent with previous events that they are dry at the end of the dry season. Continue monitoring in accordance with the SAQP and PMAP. 3. MW118 is a shallow well and is consistent with previous events that they are dry at the end of the dry season. Continue monitoring in accordance with the SAQP and PMAP. 4. MW235 is no longer available to sample and is recommended to be removed from the OMP and SAQP in the upcoming revision A replacement well for POT119 has since been installed near this sampling location on public land. The newly installed well (MW815) will be sampled during the next event. It is recommended to add the new well as a replacement location for POT119 in the next revision of the SAQP and OMP.
Concentrations are reported above the adopted drinking water health-based screening level in a Cossack or Emungalan private bore..	One private property bore reported concentrations of PFAS above the drinking water screening criteria (0.07 µg/L) POT112 reported concentrations of PFOS+PFHxS to be 0.18 µg/L which is within the same order of magnitude as historical results.	• Provision of alternative water supply has been arranged. Landowner has been informed of the risks of utilising the bore water for drinking.
Concentrations of PFAS are reported in POT111 which indicate an increase in plume size or concentrations above drinking water guidelines.	Concentrations of PFAS at POT111 were reported below the LOR during the annual sampling event in October 2024.	Continue monitoring in accordance with the SAQP and PMAP.
Detectable concentrations of PFAS are reported in POT119.	Private property location POT119 was not able to be	A replacement well for POT119 has been installed near this

Trigger Point	Comment	Recommended Actions
	accessed due to not receiving a signed access letter from landowner.	sampling location on public land. The newly installed well (MW815) will be sampled during the next event. It should be noted that MW815 was installed after the completion of the annual event, and therefore not sampled during this reporting period.
PFOS+PFHxS and/or sum of PFAS concentrations show an increasing trend.	This will be evaluated in the annual OMR using statistical analysis.	Continue monitoring in accordance with the SAQP and PMAP.
PFOS+PFHxS and/or sum of PFAS concentrations show a decreasing trend.	This will be evaluated in the annual OMR using statistical analysis.	Continue monitoring in accordance with the SAQP and PMAP.

5.2 Upcoming sampling events

The next groundwater sampling event will be the ‘monthly in wet season’ groundwater sampling, which will occur each month from November 2024 through to April 2025. The next biota sampling will be scheduled for October 2025. The next surface water sampling event will be the ‘twice in wet’ season event, scheduled for when the first rains of the wet season start, nominally November 2025.

6.0 References

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Appendix A

Figures

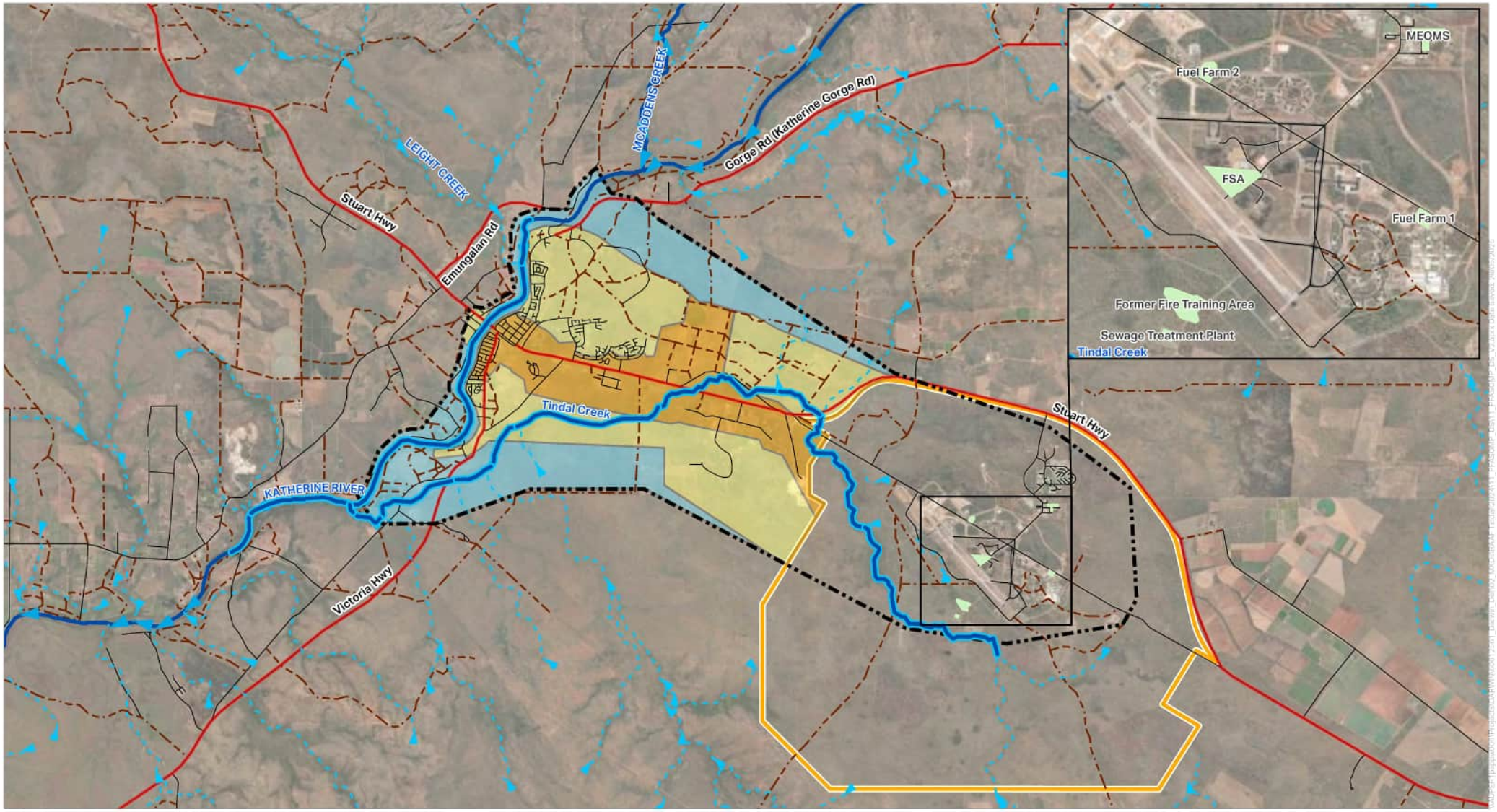

FIGURE F1: PFAS MANAGEMENT AREA

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage
- Zone 1 Groundwater > Recreational Water Criteria
- Zone 2 Groundwater > Drinking Water Criteria
- Zone 5 Groundwater < Criteria
- Source Areas

Note:

Zone 4 - Treated Town Water Supply - Not shown

N

0 1 2 3 km

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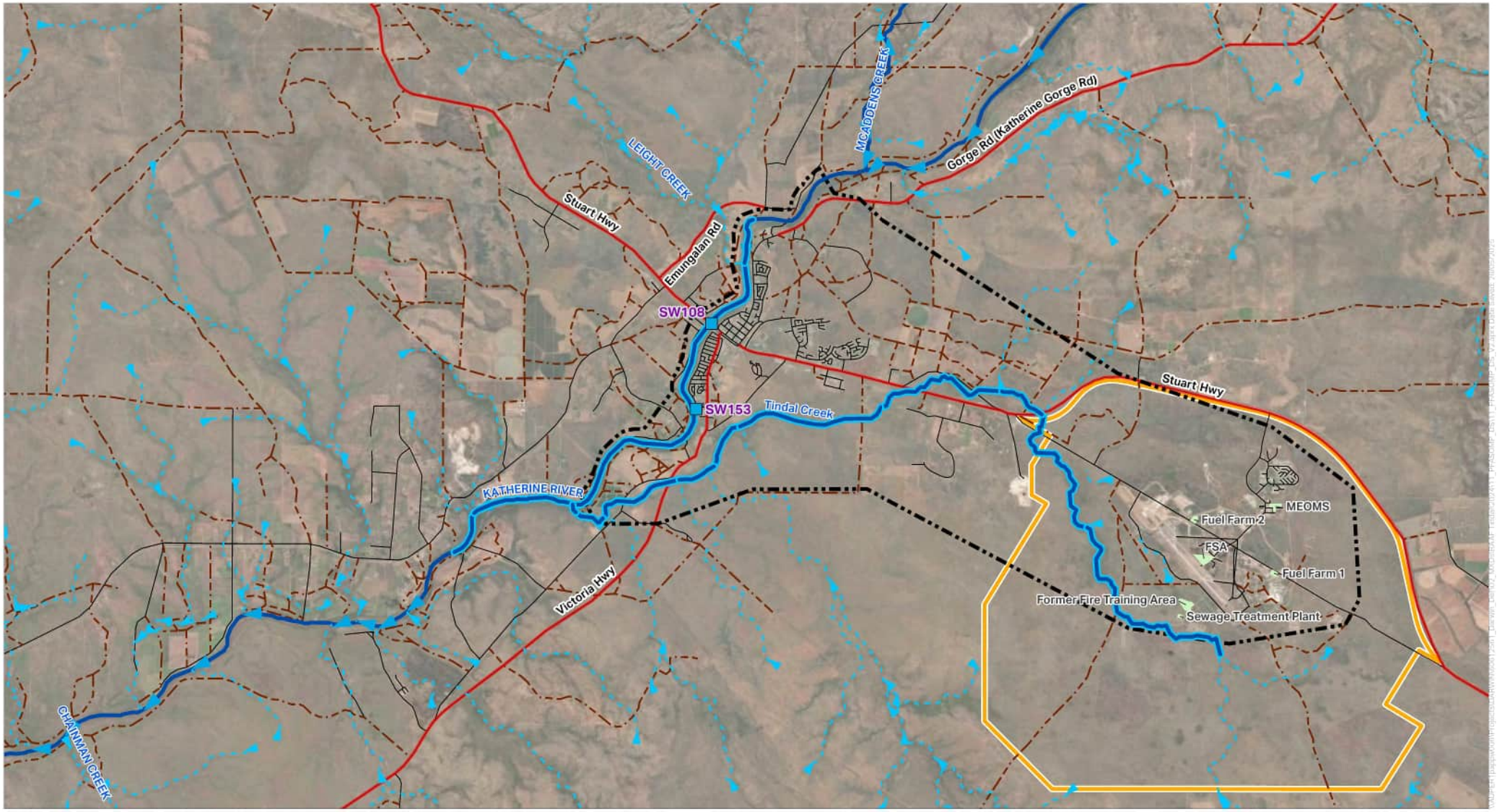

FIGURE F2: SUM OF PFOS + PFHxS CONCENTRATIONS FOR OFF-BASE SURFACE WATER LOCATIONS JUNE 2024 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Minor Creek
- Katherine River
- Drainage
- Source Areas

PFOS + PFHxS (µg/L)

- > 50
- 10 - 50
- 2 - 10
- 0.07 - 2
- 0.01 - 0.07
- < 0.01

N

0 1 2 3 km

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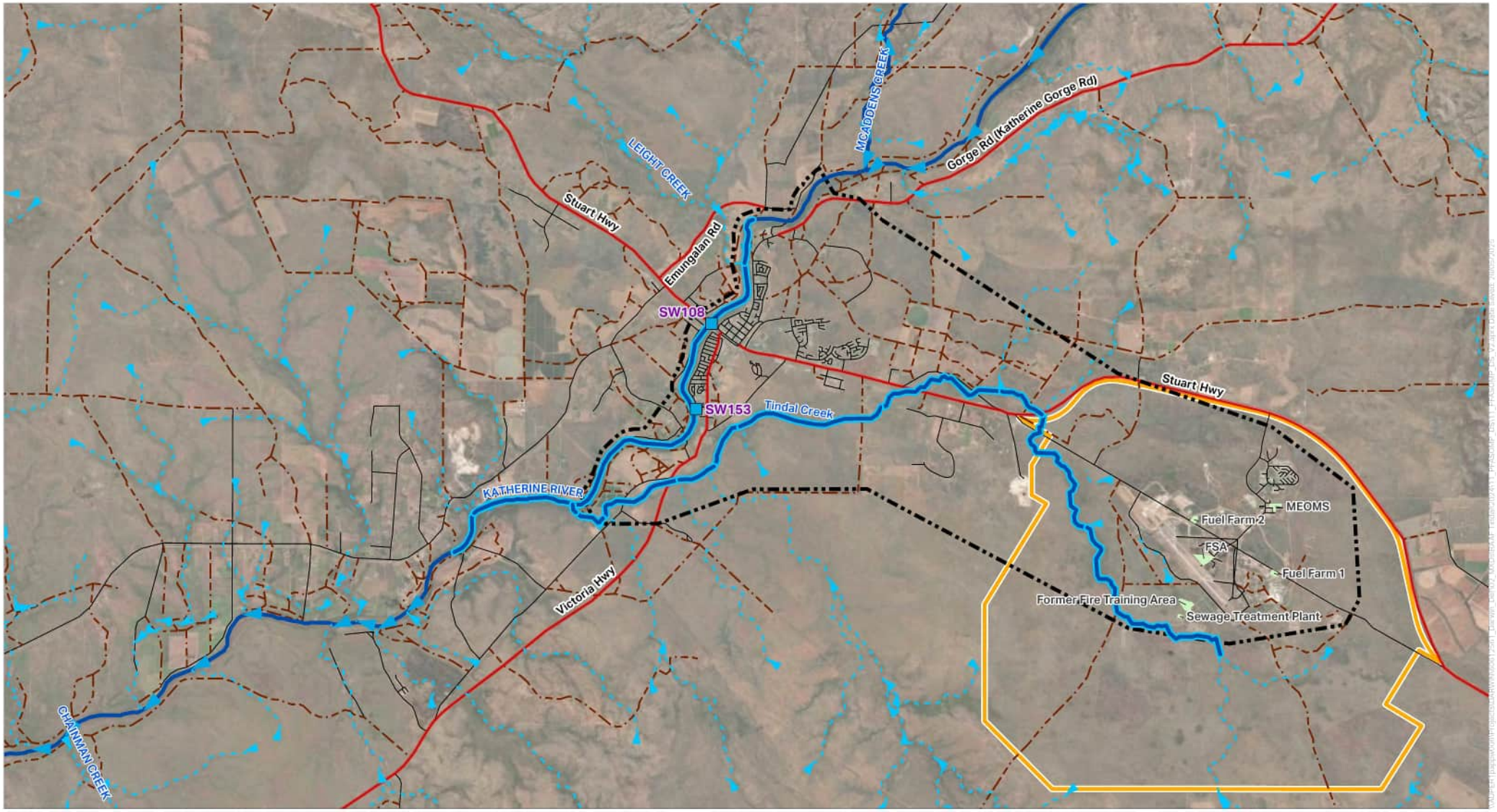

FIGURE F3: PFOA CONCENTRATIONS FOR OFF-BASE SURFACE WATER LOCATIONS JUNE 2024 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage
- Source Areas

PFOA (µg/L)

- < 0.01
- 10 - 19
- 0.56 - 10
- 0.01 - 0.56
- <0.01

N

0 1 2 3 km

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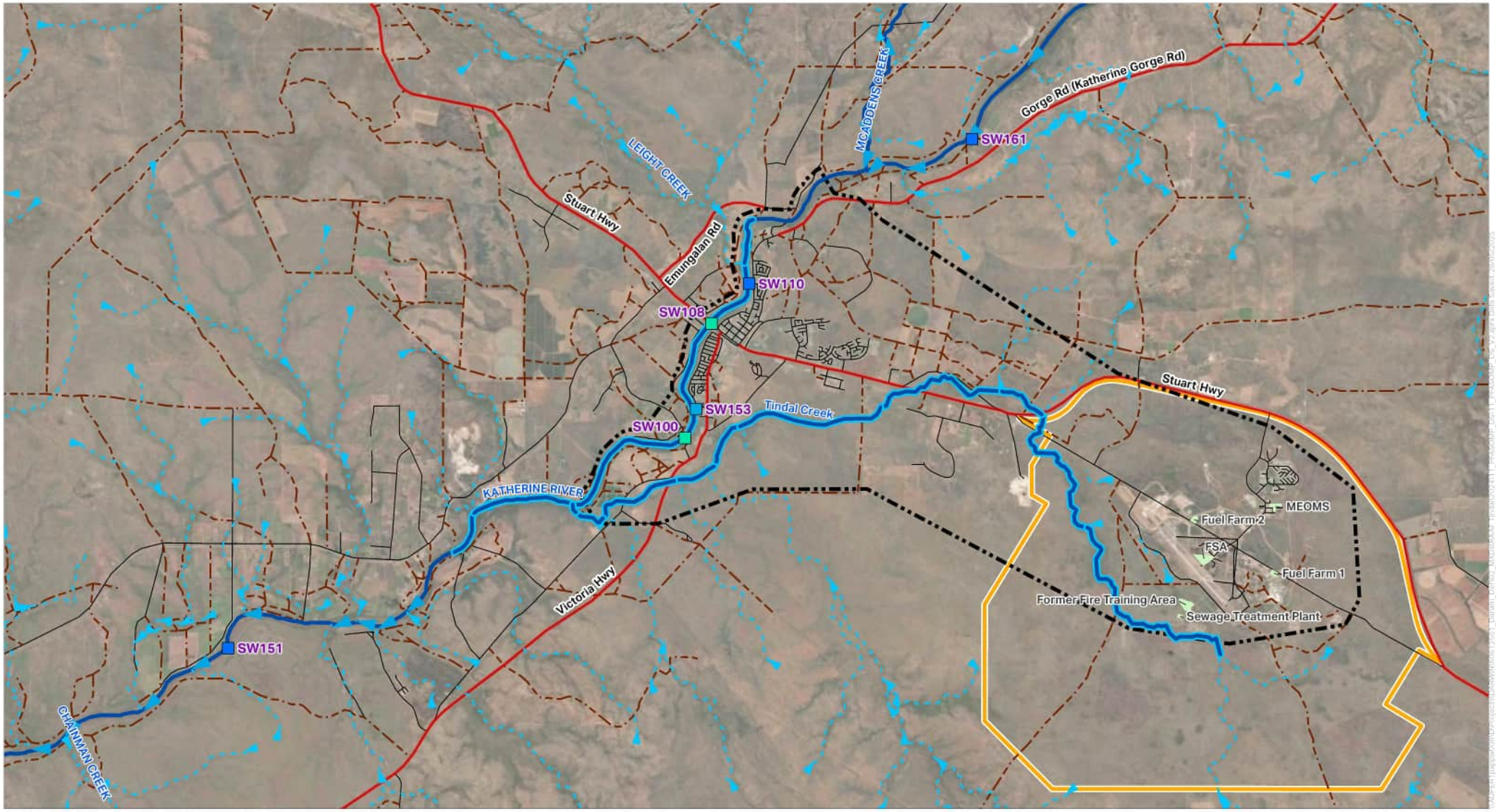

FIGURE F4: SUM OF PFOS + PFHxS CONCENTRATIONS FOR OFF-BASE SURFACE WATER LOCATIONS OCTOBER 2024 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Minor Creek
- Katherine River
- Drainage
- Source Areas

PFOS + PFHxS (µg/L)

- > 50
- 10 - 50
- 2 - 10
- 0.07 - 2
- 0.01 - 0.07
- < 0.01

N

0 1 2 3 km

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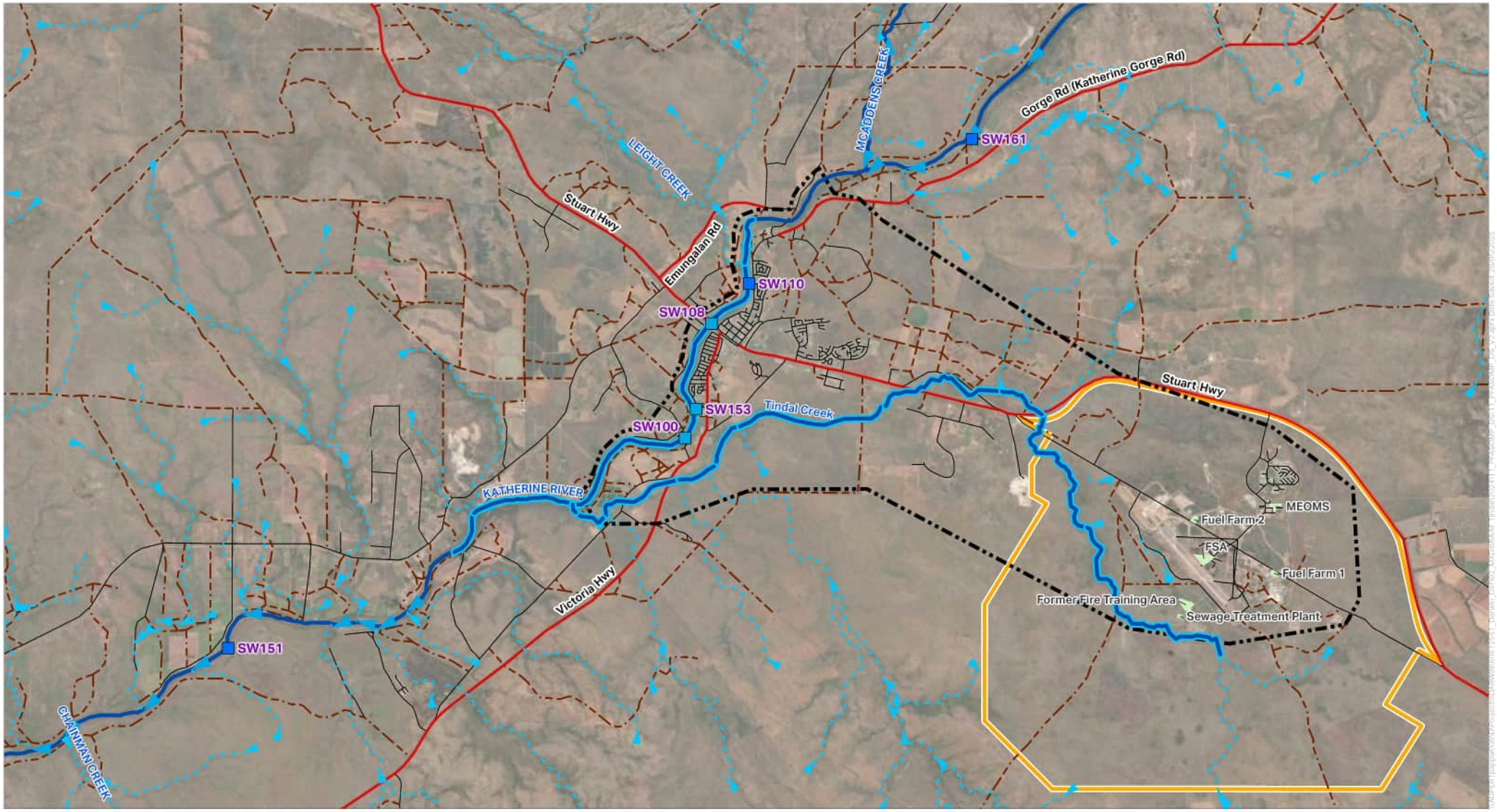

FIGURE F5: PFOA CONCENTRATIONS FOR OFF-BASE SURFACE WATER LOCATIONS OCTOBER 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage
- Source Areas

PFOA (µg/L)

- > 19
- 10 - 19
- 0.56 - 10
- 0.01 - 0.56
- <0.01

N

0 1 2 3 km

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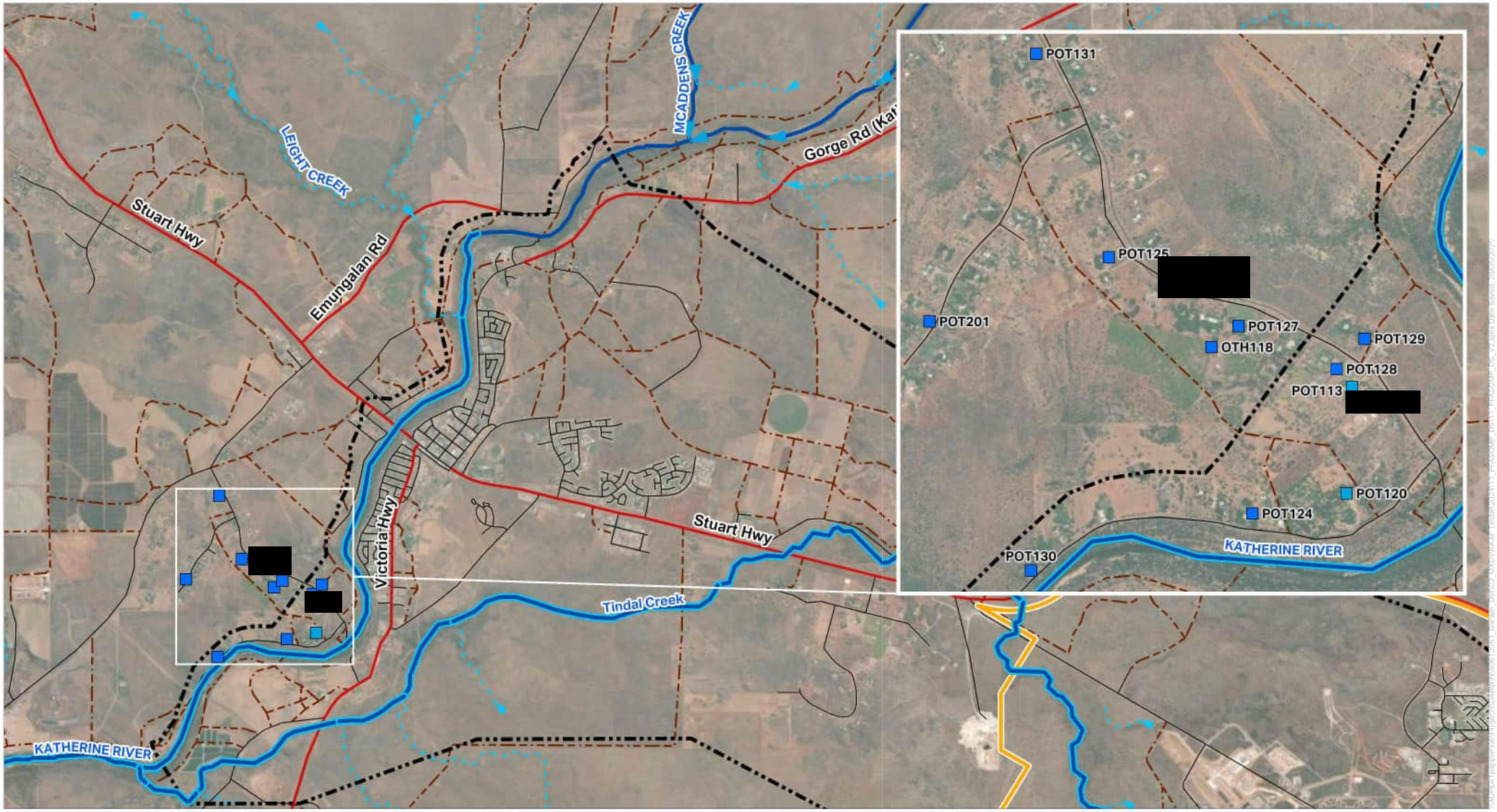

FIGURE F6: SUM OF PFOS + PFHxS CONCENTRATIONS FOR PRIVATE PROPERTY GROUNDWATER LOCATIONS OCTOBER 2024 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOS + PFHxS (µg/L)

- > 50
- 10 - 50
- 2 - 10
- 0.07 - 2
- 0.01 - 0.07
- < 0.01

Note:

OTH117, OTH119, POT114, POT121, POT198 not shown for privacy reasons.

N

0 1 2 km

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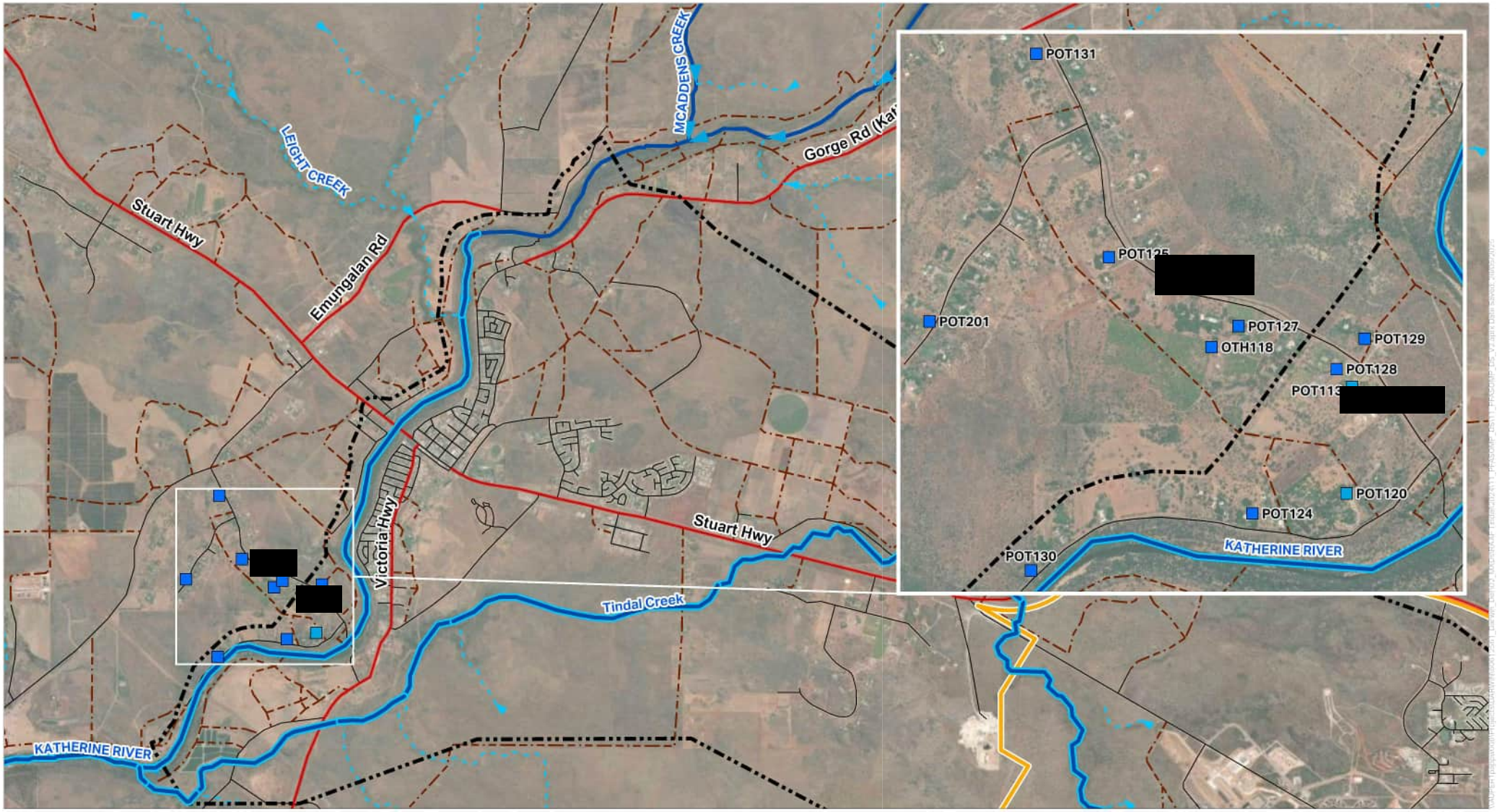

FIGURE F7: PFOA CONCENTRATIONS FOR PRIVATE PROPERTY GROUNDWATER LOCATIONS OCTOBER 2024 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOA (µg/L)

- > 19
- 10 - 19
- 0.56 - 10
- 0.01 - 0.56
- <0.01

Note:

OTH117, OTH119, POT114, POT121, POT198 not shown for privacy reasons.

N

0 1 2 km

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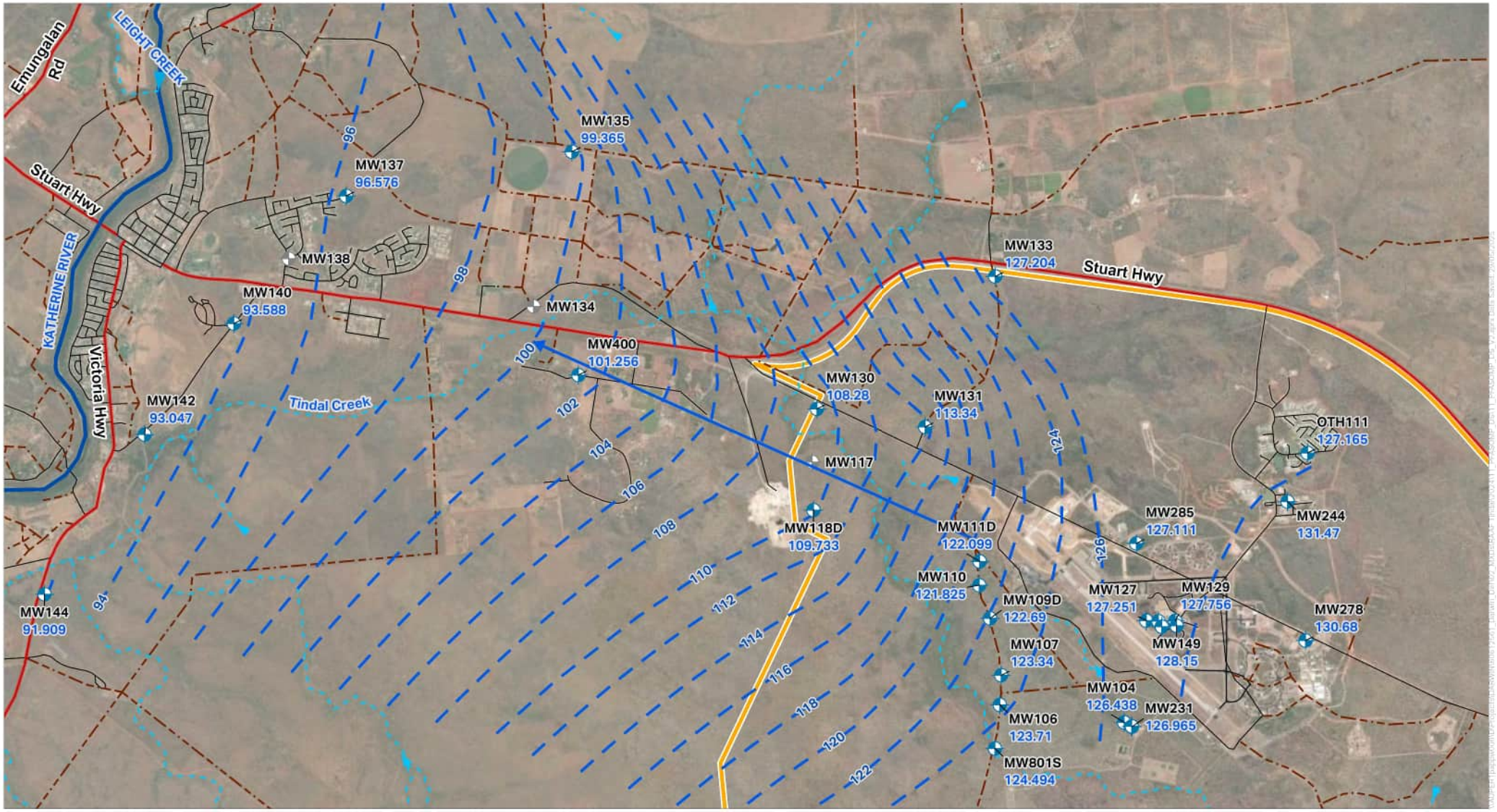

FIGURE F8: INFERRED GROUNDWATER FLOW AND ELEVATION CONTOURS OCTOBER 2024

Legend

- RAAF Base Tindal
- Highway
- Road
- Track
- Katherine River
- Drainage
- Annual Groundwater Locations
- Not Sampled Due To Being Inaccessible, Dry or Blocked
- Inferred Groundwater Level (mAHD)
- Inferred Groundwater Direction

N

0 1 2 km

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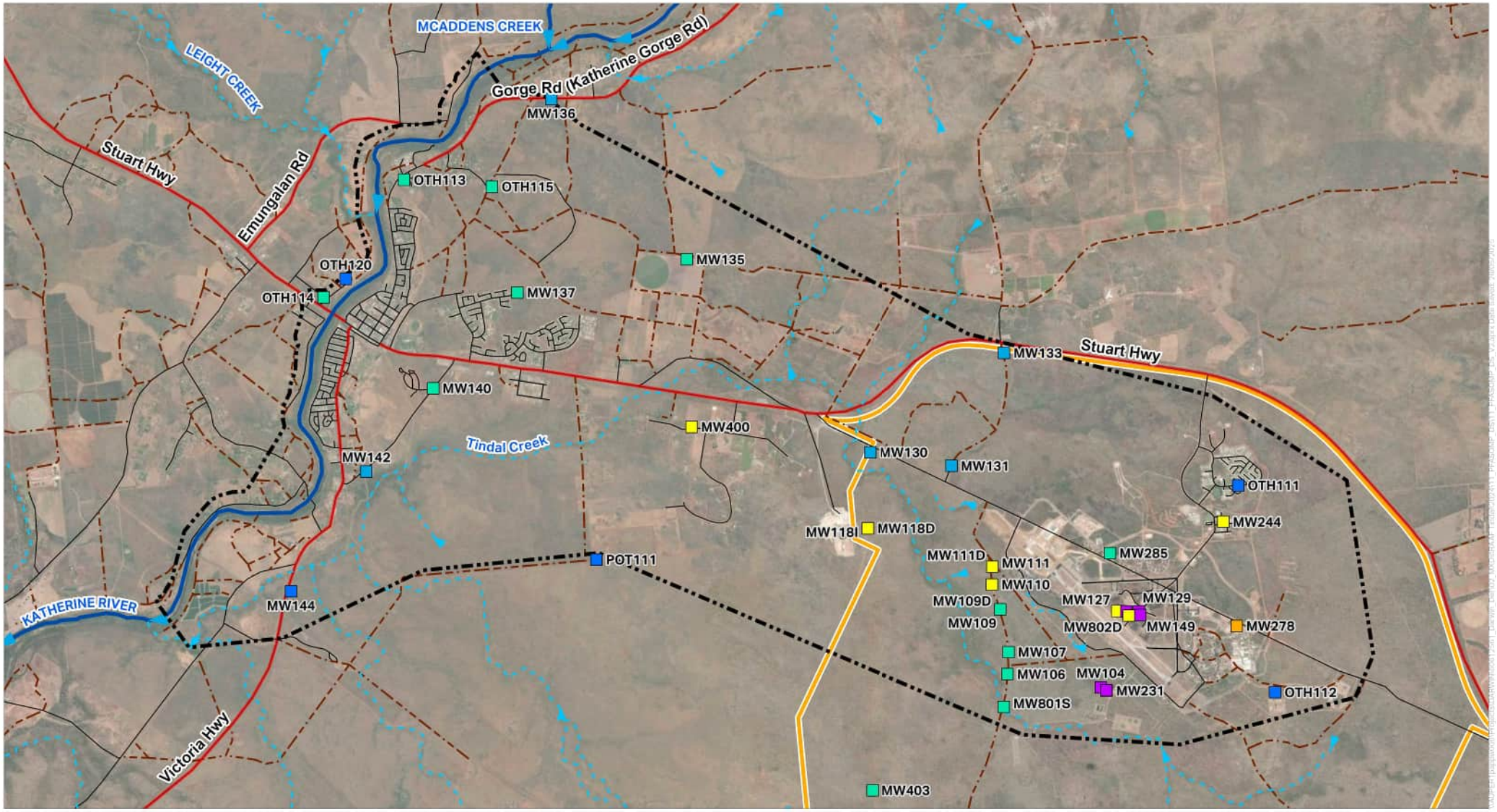

FIGURE F9: SUM OF PFOS + PFHxS CONCENTRATIONS FOR ON AND OFF-BASE GROUNDWATER LOCATIONS OCTOBER 2024 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOS + PFHxS (µg/L)

- > 50
- 10 - 50
- 2 - 10
- 0.07 - 2
- 0.01 - 0.07
- < 0.01

N

0 1 2 km

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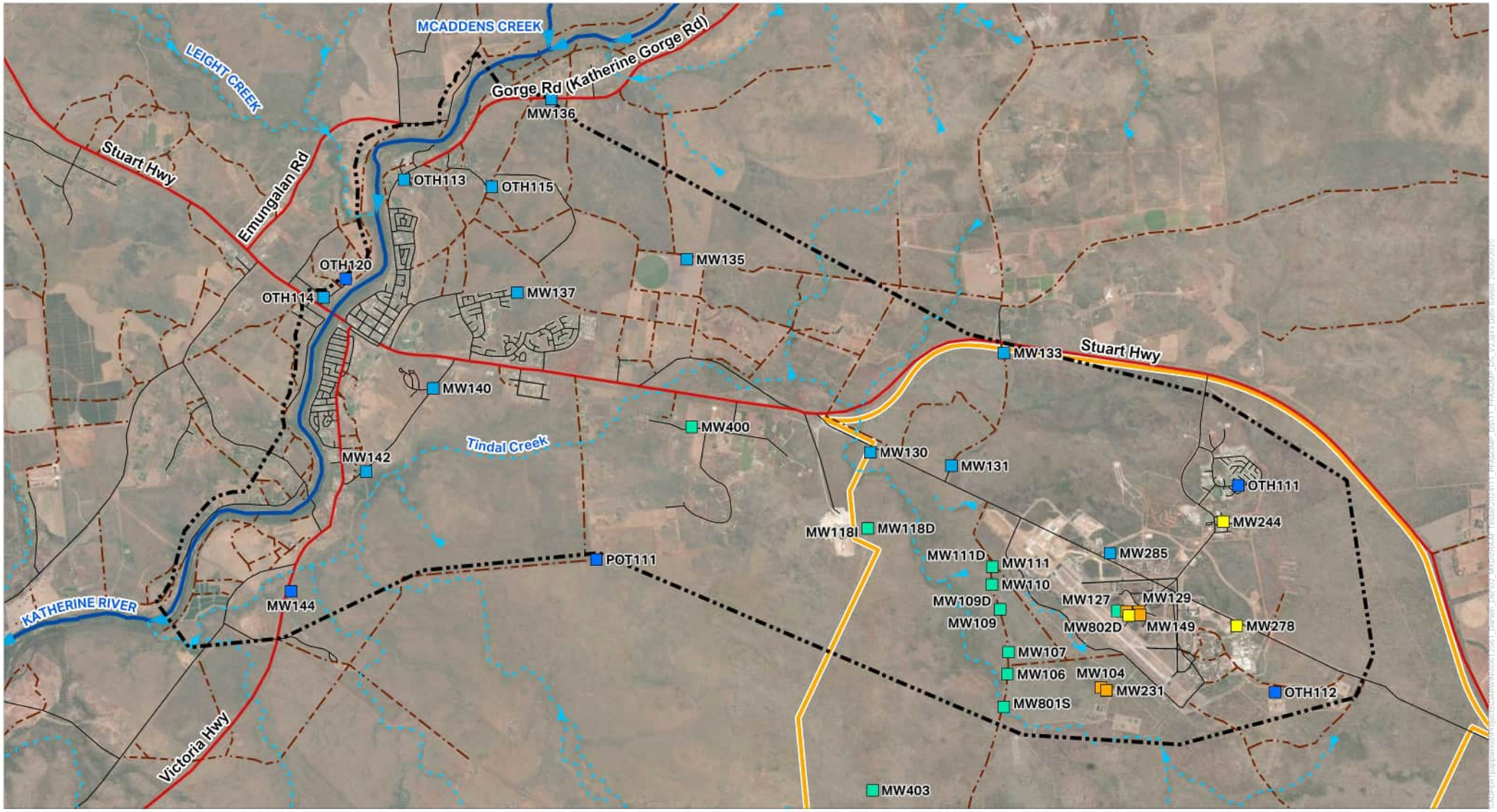

FIGURE F10: PFOA CONCENTRATIONS FOR ON AND OFF-BASE GROUNDWATER LOCATIONS OCTOBER 2024 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOA (µg/L)

- > 19
- 10 - 19
- 0.56 - 10
- 0.01 - 0.56
- <0.01

N

0 1 2 km

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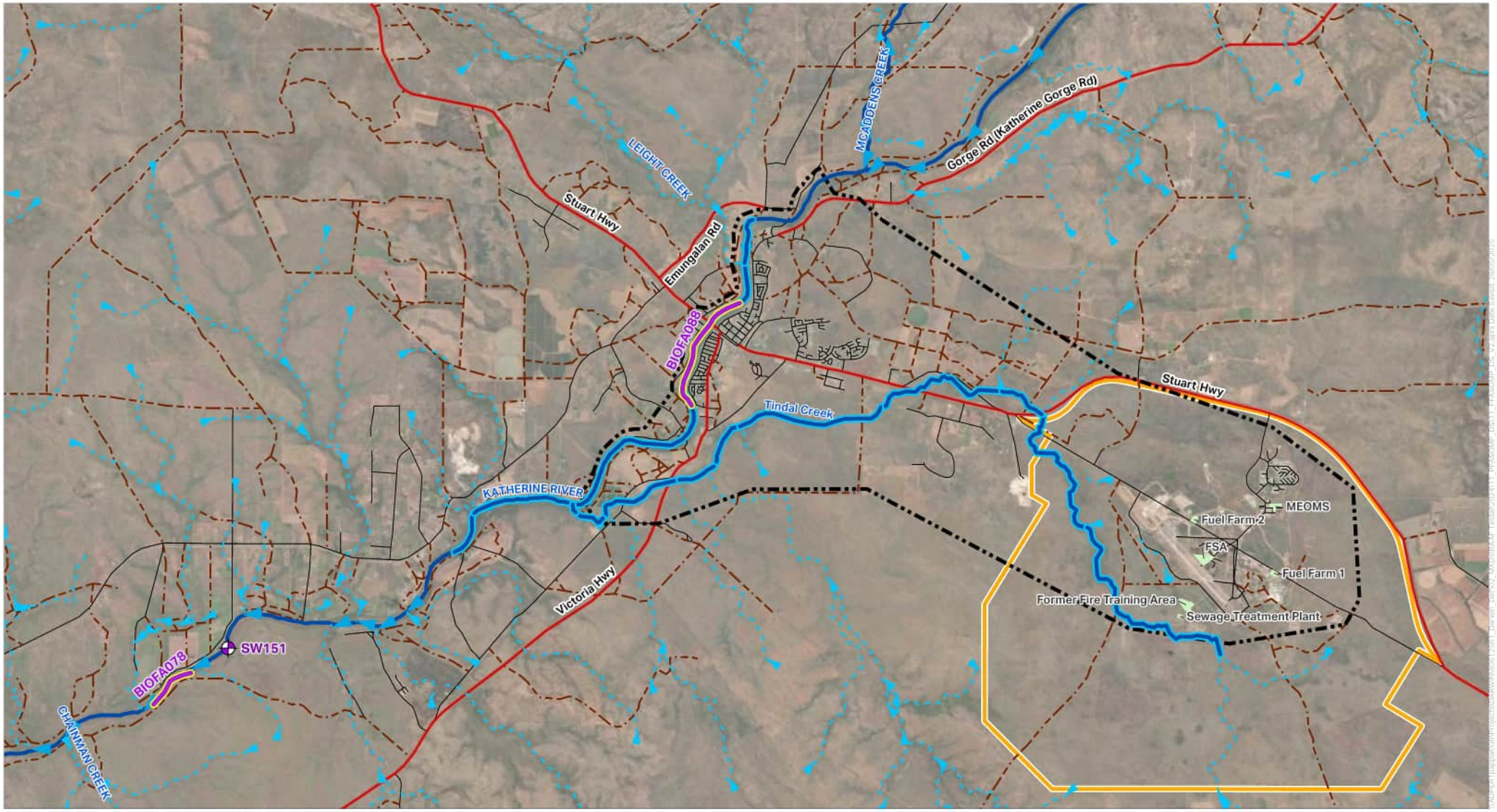

FIGURE F11: BIOTA SAMPLING LOCATIONS

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage
- Biota Sampling Surface Water Locations
- Biota Sampling Locations
- Source Areas

N

0 1 2 3 km

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Appendix B

Tables

Appendix B - Table 1
Surface water Field Parameters
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF BaseTindal

Table T1 - Surface Water Field Parameters

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		Sampling Results											
Frequency	**Location ID**	**Date**	**DO (mg/L)**	**EC (µS/cm)**	**pH**	**Redox (mV)**	**Redox (corr) (mV)**	**Temp (^{o}C)**	**Turbditiy**	**Water Colour**	**Odour**	**Sheen**	**Sample Method**
Quarterly	SW108	19/06/2024	4.62	191.9	7.13	103	303	33.3	Moderate	Light brown	No odour	No sheen	Grab
	SW152	19/06/2024	2.91	825	6.84	109.3	309.3	30.4	Low	colourless	No odour	No sheen	Grab
	OTH008	19/06/2024	Inaccessible due to construction										
Quarterly	SW108	30/10/2024	5.96	470.9	5.27	137.5	337.5	33.8	Low	Brown	No odour	No sheen	Grab
	SW153	30/10/2024	4.45	683	5.13	153.4	353.4	32.5	Low	Brown	No odour	No sheen	Grab
	OTH008	30/10/2024	Inaccessible due to construction										
Biannual	SW100	30/10/2024	7.18	586	5.27	151	351	33.2	Low	Brown	No odour	No sheen	Grab
	SW110	30/10/2024	6.59	161.2	5.27	145.2	345.2	33.6	Low	Brown	No odour	No sheen	Grab
	SW161	30/10/2024	5.33	79.3	5.34	105.6	305.6	31.3	Low	Brown	No odour	No sheen	Grab
Annual	SW151	15/10/2024	Missing parameters										

Notes:
mg/L: milligram per Litre
µS/cm: microsiemens per centimetre
mV: millivolts
^{o}C: degrees celcius
Corrected redox = redox + 200

Appendix B - Table T2
Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T2 - Surface Water Analytical Results

					Per- and Poly-fluoroalkyl Substances																												
					4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	Sum of PFAS	Sum of PFOS+PFHxS	Perfluorooctane sulfonate (PFOS)	Perfluorooctanoic Acid (PFOA)	Perfluorohexane sulfonate (PFHxS)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.05	0.05	0.05	0.05	0.02	0.02	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.1	0.05	0.05	0.05	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01
Human Health Guidelines																																	
PFAS NEMP 2025 Drinking water quality guideline																														**0.07**	**0.07**	**0.56**	**0.07**
PFAS NEMP 2025 Recreational water quality guideline																														2		10	
Ecological Guidelines																																	
PFAS NEMP 2025 Freshwater 99%																															*0.00023*	*19*	
Location Code	**Date**	**Field ID**	**Frequency**	**Lab Report Number**																													
SW151	**16 Oct 2024**	**0990_SW151_241016**	**Annual**	**ES2434947**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	**0.17**	**0.17**	***0.09***	<0.01	**0.08**
SW100	**30 Oct 2024**	**0990_SW100_241030**	**Biannual**	**ES2435723**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	**0.27**	**0.27**	***0.16***	<0.01	**0.11**
SW110	**30 Oct 2024**	**0990_SW110_241030**	**Biannual**	**ES2435723**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
SW161	**01 Nov 2024**	**0990_SW161_221101**	**Biannual**	**ES2435723**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
SW108	**19 Jun 2024**	**0990_SW108_240619**	**Quarterly**	**ES2420210**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	**0.07**	**0.07**	*0.04*	<0.01	**0.03**
SW108	**30 Oct 2024**	**0990_SW108_241030**	**Quarterly**	**ES2435723**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	**0.21**	**0.21**	***0.12***	<0.01	**0.09**
SW153	**19 Jun 2024**	**0990_SW153_240619**	**Quarterly**	**ES2420210**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	**0.03**	**0.03**	*0.02*	<0.01	**0.01**
SW153	**30 Oct 2024**	**0990_SW153_241030**	**Quarterly**	**ES2435723**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	**0.02**	**0.02**	*0.02*	<0.01	<0.01

Notes:
µg/L: micrograms per litre
LOR: limit of reporting
* LOR is above guideline value

Table 3 - Private Property Groundwater Field Results

AECOM

Location ID	Date	DO (mg/L)	EC (µS/cm)	pH	Redox (mV)	Redox (corr) (mV)	TDS	Temp (°C)	Turbidity	Water Colour	Odour	Sheen	Sample Method
OTH117	15/10/2024	3.74	747	7.20	93.0	293.0	478.1	29.8	Low	Colourless	No odour	No sheen	Tap
OTH118	16/10/2024	3.36	784	7.13	89.5	289.5	501.8	32.0	Low	Colourless	No odour	No sheen	Tap
OTH119	15/10/2024	3.96	894	7.17	97.6	297.6	572.2	33.0	Low	Colourless	No odour	No sheen	Tap
POT112	15/10/2024	2.94	774	7.74	93.3	293.3	495.4	30.4	Low	Colourless	No odour	No sheen	Tap
POT113	15/10/2024	3.39	832	6.87	95.0	295.0	532.5	31.1	Low	Colourless	No odour	No sheen	Tap
POT114	30/10/2024	3.03	725	5.32	13.8	213.8	464.0	33.4	Low	Colourless	No odour	No sheen	Tap
POT120	30/10/2024	5.34	691	5.57	167.4	367.4	442.2	34.1	Low	Colourless	No odour	No sheen	Tap
POT121	16/10/2024	4.17	744	7.74	96.6	296.6	476.2	30.3	Low	Colourless	No odour	No sheen	Tap
POT124	16/10/2024	4.52	758	7.76	103.5	303.5	485.1	30.9	Low	Colourless	No odour	No sheen	Tap
POT125	16/10/2024	4.52	758	7.76	103.5	303.5	485.1	30.9	Low	Colourless	No odour	No sheen	Tap
POT126	15/10/2024	3.56	780	7.19	94.8	294.8	499.2	32.3	Low	Colourless	No odour	No sheen	Tap
POT127	16/10/2024	2.29	1027	7.15	85.5	285.5	657.3	48.7	Low	Colourless	No odour	No sheen	Tap
POT128	15/10/2024	9.16	752	7.00	91.4	291.4	481.3	30.6	Low	Colourless	No odour	No sheen	Tap
POT129	15/10/2024	4.22	764	7.28	94.2	294.2	489.0	30.7	Low	Colourless	No odour	No sheen	Tap
POT130	16/10/2024	4.04	756	7.41	82.6	282.6	483.8	30.3	Low	Colourless	No odour	No sheen	Tap
POT131	15/10/2024	3.50	735	7.67	92.4	292.4	470.4	32.3	Low	Colourless	No odour	No sheen	Tap
POT198	16/10/2024	4.40	798	7.03	96.4	296.4	510.7	30.2	Low	Colourless	No odour	No sheen	Tap
POT201	16/10/2024	3.51	798	7.39	93.8	293.8	510.7	30.8	Low	Colourless	No odour	No sheen	Tap

Note:
mg/l = miligrams per litre
°C = degrees celsisus
µS/cm = microsiemens per centremetre
mV = millivolts
Redox Corrected = Redox + 200
* Calculated value were TDS = EC*0.64

Appendix B - Table T4
Private Property Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T4 - Private Property Groundwater Analytical Results

					Per- and Poly-fluoroalkyl Substances																												
					4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	Sum of PFAS	Sum of PFHxS and PFOS	Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonate (PFOS)	Perfluorohexane sulfonate (PFHxS)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.05	0.05	0.05	0.05	0.02	0.02	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.1	0.05	0.05	0.05	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01
Human Health Guidelines																																	
PFAS NEMP 2025 Drinking water quality guideline																														**0.07**	**0.56**		
PFAS NEMP 2025 Recreational water quality guideline																														2	10		
Ecological Guidelines																																	
PFAS NEMP 2025 Freshwater 99%																															*19*	*0.00023*	
Location Code	**Field ID**	**Date**	**Frequency**	**Lab Report Number**																													
OTH117	**0990_OTH117_241015**	**15 Oct 2024**	**Once in dry season**	**ES2433846**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
OTH118	**0990_OTH118_241016**	**16 Oct 2024**	**Once in dry season**	**ES2433837**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
OTH119	**0990_OTH119_241015**	**15 Oct 2024**	**Once in dry season**	**ES2433853**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
POT112	**0990_POT112_241015**	**15 Oct 2024**	**Once in dry season**	**ES2433854**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.26	**0.18**	<0.01	*0.14*	0.04
POT113	**0990_POT113_241015**	**15 Oct 2024**	**Once in dry season**	**ES2433852**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.07	0.07	<0.01	*0.04*	0.03
POT114	**0990_POT114_241030**	**30 Oct 2024**	**Once in dry season**	**ES2435721**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
POT120	**0990_POT120_241030**	**30 Oct 2024**	**Once in dry season**	**ES2435722**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.05	0.05	<0.01	*0.03*	0.02
POT121	**0990_POT121_241016**	**16 Oct 2024**	**Once in dry season**	**ES2433838**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.03	0.03	<0.01	*0.02*	0.01
POT124	**0990_POT124_241017**	**17 Oct 2024**	**Once in dry season**	**ES2433839**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
POT125	**0990_POT125_241016**	**16 Oct 2024**	**Once in dry season**	**ES2433840**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
POT126	**0990_POT126_241015**	**15 Oct 2024**	**Once in dry season**	**ES2433847**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
POT127	**0990_POT127_241016**	**16 Oct 2024**	**Once in dry season**	**ES2433841**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
POT128	**0990_POT128_241015**	**15 Oct 2024**	**Once in dry season**	**ES2433848**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
POT129	**0990_POT129_241015**	**15 Oct 2024**	**Once in dry season**	**ES2433850**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
POT130	**0990_POT130_241016**	**16 Oct 2024**	**Once in dry season**	**ES2433842**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
POT131	**0990_POT131_241015**	**15 Oct 2024**	**Once in dry season**	**ES2433851**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
POT198	**0990_POT198_241016**	**16 Oct 2024**	**Once in dry season**	**ES2433843**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
POT201	**0990_POT201_241016**	**16 Oct 2024**	**Once in dry season**	**ES2433844**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01

Notes:
µg/L: micrograms per litre
LOR: ILimit of Reporting

Client Name: Department of Defence
Project Name: RAAF Base Tindal - PFAS Ongoing Monitoring Plan

Table 5a - Groundwater Gauging Results

AECOM

Location ID	Date	TOC (AHD)	Depth to Water (mbtoc)	Well Depth (mbtoc)	Elevation (mAHD)	Screen interval	Hydrosleeve install depth	Comments
MW104	15/10/2024	132.988	6.550	20.85	126.438	6.5	10	Clay on probe
MW106	15/10/2024	130.160	6.450	16.30	123.710	6.5	9.5	Good condition, no odour, no sheen
MW107	15/10/2024	130.710	7.370	13.79	123.340	7.3	10	Gatic had been left open
MW109	15/10/2024	128.640	5.960	7.36	122.680	6	6.2	Low water level
MW109D	15/10/2024	128.620	5.930	20.87	122.690	15.5	9	Good condition, no odour, no sheen
MW110	15/10/2024	126.970	5.145	17.00	121.825	6	8	Good condition, no odour, no sheen
MW111D	15/10/2024	128.599	6.500	7.50	122.099	47	46	Good condition, no odour, no sheen
MW111S	15/10/2024	128.478	6.510	8.39	121.968	-	7.39	Good condition, no odour, no sheen
MW117	15/10/2024	-	-	-	-	-	-	Dry
MW118D	15/10/2024	126.553	16.820	50.00	109.733	47	47	Good condition, no odour, no sheen
MW118I	15/10/2024	126.507	16.760	36.00	109.747	32	31	Good condition, no odour, no sheen
MW118S	15/10/2024	-	-	-	-	-	-	Dry, roots present
MW119	15/10/2024	-	-	-	-	-	-	Dry, termites present
MW127	16/10/2024	130.701	3.450	20.00	127.251	4.5	6.5	Good condition, no odour, no sheen
MW129	16/10/2024	132.876	5.120	19.50	127.756	5.0	8.5	Good condition, no odour, no sheen
MW130	15/10/2024	117.580	9.300	19.22	108.280	9,4	-	Good condition, no odour, no sheen
MW131	16/10/2024	122.000	8.660	15.27	113.340	-	10.0	Roots present
MW133	16/10/2024	133.154	5.950	20.00	127.204	4.8	9.0	Clay and roots present
MW134	16/10/2024	-	-	-	-	-	-	Blocked with roots
MW135	15/10/2024	117.300	17.935	19.82	99.365	19.0	19.8	Hydrosleeve dropped to bottom of well
MW136	16/10/2024	107.520	11.722	25.40	95.798	19.9	18.0	Good condition, no odour, no sheen
MW137	16/10/2024	102.845	13.294	20.10	89.551	14.2	15.3	Good condition, no odour, no sheen
MW138	16/10/2024	-	-	-	-	-	-	Blocked with roots
MW140	15/10/2024	101.234	7.646	-	93.588	12.0	13.0	Good condition, no odour, no sheen
MW142	16/10/2024	102.234	9.187	-	93.047	9.6	12.0	Good condition, no odour, no sheen
MW144	16/10/2024	101.234	9.325	-	91.909	10.0	12.0	Good condition, no odour, no sheen
MW146	16/10/2024	131.666	4.000	18.10	127.666	15.0	7.0	Good condition, no odour, no sheen
MW149	16/10/2024	142.960	5.750	17.50	137.210	13.0	11.0	Good condition, no odour, no sheen
MW231	15/10/2024	134.520	7.555	23.80	126.965	5.5	10.6	Grey clay on probe
MW244	16/10/2024	142.960	11.490	21.00	131.470	12.0	14.5	Hydrocarbon odour, gelled substance
MW278	16/10/2024	139.460	8.780	23.15	130.680	5.0	11.5	Good condition, no odour, no sheen
MW285	16/10/2024	131.430	4.319	18.76	127.111	5.5	7.5	Good condition, no odour, no sheen
MW400	16/10/2024	111.080	9.824	-	101.256	33.5	33.0	Good condition, no odour, no sheen
MW403*	16/10/2024	133.900	9.760	11.37	124.140	9.5	11.1	Low water level
MW403*	9/12/2024	133.900	9.989	11.45	123.911	9.5	-	Resample
MW801S	15/10/2024	129.424	4.930	11.54	124.494	6.5	-	Clay on probe
MW802D	16/10/2024	132.707	5.090	19.50	127.617	17.0	17.0	Good condition, no odour, no sheen
MW802I	16/10/2024	132.952	5.140	15.34	127.812	13.0	13.5	Good condition, no odour, no sheen
MW802S	16/10/2024	132.882	5.210	10.55	127.672	8.8	9.5	Gatic has been knocked over, well intact
MW803D	15/10/2024	133.818	7.450	25.64	126.368	21.0	20.0	Good condition, no odour, no sheen
MW803I	15/10/2024	133.840	7.470	16.00	126.370	14.0	14.0	Grey clay on probe
MW803S	15/10/2024	133.869	7.440	11.00	126.429	9.0	9.0	Good condition, no odour, no sheen
OTH111	16/10/2024	144.955	17.790	64.00	127.165	48.0	46.0	Good condition, no odour, no sheen

Note:
AHD - Australian Height Datum
mAHD - metres above Australian Height Datum
* MW403 required resampling in December 2024

Table 5b - Groundwater Field Results

AECOM

Location ID	Date	DO (mg/L)	EC (µS/cm)	pH	Redox (mV)	Redox (corr) (mV)	TDS*	Temp (°C)	Turbditiy	Water Colour	Odour	Sheen	Sample Method
MW104	17/10/2024	1.93	400	6.72	48.5	248.5	256	33.0	Low	Colourless	No odour	No sheen	Hydrasleeve
MW106	18/10/2024	1.64	811	6.69	77.2	277.2	519.04	31.7	Low	Colourless	No odour	No sheen	Hydrasleeve
MW107	18/10/2024	2.10	858	6.72	17.2	217.2	549.12	31.7	Low	Colourless	Organic odour	Sheen	Hydrasleeve
MW109	18/10/2024	2.35	899	6.63	28.0	228.0	575.36	31.6	Low	Colourless	Organic odour	Sheen	Hydrasleeve
MW109D	18/10/2024	1.60	939	6.77	96.8	296.8	600.96	32.3	Moderate	Colourless	No odour	No sheen	Hydrasleeve
MW110	18/10/2024	1.40	1000	6.68	113.4	313.4	640	31.3	Moderate	Colourless	No odour	No sheen	Hydrasleeve
MW111D	18/10/2024	0.92	993	6.84	26.3	226.3	635.52	32.7	Low	Colourless	No odour	Sheen	Hydrasleeve
MW111S	18/10/2024	0.80	1095	6.56	15.4	215.4	700.8	32.7	Low	Colourless	Organic odour	Sheen	Hydrasleeve
MW117	18/10/2024	Dry											
MW118D	18/10/2024	1.45	968	6.63	98.4	298.4	619.52	30.8	Low	Colourless	Organic odour	Sheen	Hydrasleeve
MW118I	18/10/2024	2.28	910	6.74	31.8	231.8	582.4	32	Low	Colourless	Organic odour	Sheen	Hydrasleeve
MW118S	18/10/2024	Dry - root blockage											
MW119	18/10/2024	Dry											
MW127	19/10/2024	0.62	784	6.71	58.7	258.7	501.76	31.2	Low	Colourless	No odour	No sheen	Hydrasleeve
MW129	19/10/2024	1.37	720	7.14	51.1	251.1	460.8	30.2	Moderate	Colourless	No odour	No sheen	Hydrasleeve
MW130	19/10/2024	2.19	948	6.75	142.3	342.3	606.72	31.1	Low	Colourless	No odour	Sheen	Hydrasleeve
MW131	18/10/2024	1.58	870	6.70	47.3	247.3	556.8	30.9	Moderate	Colourless	No odour	Sheen	Hydrasleeve
MW133	1/11/2024	1.33	653	5.33	83.6	283.6	417.92	30.4	Moderate	Brown	No odour	No sheen	Hydrasleeve
MW134	19/10/2024	Dry - root blockage											
MW135	21/10/2024	1.74	1101	6.76	56.6	256.6	704.64	30.5	Moderate	Colourless	No odour	No sheen	Hydrasleeve
MW136	20/10/2024	0.53	903	6.35	193.8	393.8	577.92	31.7	Moderate	Colourless	No odour	No sheen	Hydrasleeve
MW137	20/10/2024	2.17	978	6.74	133.2	333.2	625.92	31.7	Moderate	Colourless	No odour	No sheen	Hydrasleeve
MW138	20/10/2024	Dry - root blockage											
MW140	1/11/2024	4.59	568	5.24	147.2	347.2	363.52	33.1	Low	Colourless	No odour	No sheen	Hydrasleeve
MW142	19/10/2024	1.17	848	6.62	116.6	316.6	542.72	30.7	Moderate	Colourless	No odour	No sheen	Hydrasleeve
MW144	19/10/2024	1.17	1320	6.72	141.6	341.6	844.8	30.0	Moderate	Colourless	No odour	No sheen	Hydrasleeve
MW146	19/10/2024	1.44	792	6.82	64.9	264.9	506.88	30.4	Moderate	Colourless	No odour	Sheen	Hydrasleeve
MW149	19/10/2024	1.75	720	7.14	51.1	251.1	460.8	30.2	Moderate	Brown	No odour	Sheen	Hydrasleeve
MW231	20/10/2024	1.80	225.6	6.29	40.3	240.3	144.384	31.1	Moderate	Grey	No odour	Sheen	Hydrasleeve
MW244	21/10/2024	1.65	805	6.76	-37.4	162.6	515.2	30.4	Low	Colourless	Hydrocarbon	No sheen	Hydrasleeve
MW278	22/10/2024	2.13	311.5	6.71	183.8	383.8	199.36	33.7	Low	Colourless	No odour	No sheen	Hydrasleeve
MW285	22/10/2024	1.52	780	6.84	185.1	385.1	499.2	34.7	Low	Colourless	No odour	No sheen	Hydrasleeve
MW400	19/10/2024	1.92	812	6.21	154.7	354.7	519.68	32.3	Moderate	Colourless	No odour	No sheen	Hydrasleeve
MW403*	17/10/2024	2.45	1101	7.10	77.6	277.6	704.64	-	Low	Colourless	No odour	No sheen	Hydrasleeve
MW403*	9/12/2024	2.45	1101	7.10	77.6	32.9	704.64	-	Low	Colourless	No odour	No sheen	Hydrasleeve
MW801S	18/10/2024	1.82	911	6.49	89.8	289.8	583.04	31.6	Moderate	Colourless	No odour	Sheen	Hydrasleeve
MW802D	1910/2024	0.60	944	6.85	87.1	287.1	604.16	32.4	Low	Colourless	No odour	Sheen	Hydrasleeve
MW802I	19/10/2024	0.75	1069	6.86	158.5	358.5	684.16	32.4	Low	Colourless	No odour	Sheen	Hydrasleeve
MW802S	19/10/2024	1.47	1577	7.23	126.7	326.7	1009.28	31.8	Low	Colourless	No odour	Sheen	Hydrasleeve
MW803D	17/10/2024	1.49	548	6.77	28.4	228.4	350.72	32.6	Moderate	Colourless	No odour	No sheen	Hydrasleeve
MW803I	17/10/2024	2.11	1358	6.53	46.0	246.0	869.12	32.0	Moderate	Colourless	No odour	No sheen	Hydrasleeve
MW803S	17/10/2024	2,57	359	6.73	57.3	257.3	229.76	32.7	Moderate	Colourless	No odour	No sheen	Hydrasleeve
POT111	30/10/2024	5.34	744	5.34	99.4	299.4	476.16	36.1	Low	Colourless	No odour	No sheen	Tap
OTH111	18/10/2024	2.02	845	6.85	57.4	257.4	540.8	31.4	Moderate	Colourless	No odour	No sheen	Hydrasleeve
OTH112	23/10/2024	2.59	916	7.02	65.2	265.2	586.24	34.5	Low	Colourless	No odour	No sheen	Tap
OTH113	7/11/2024	1.71	911	5.62	59.7	259.7	583.04	52.5	Low	Colourless	No odour	No sheen	Tap
OTH114	30/10/2024	2.11	748	5.08	146.5	346.5	478.72	32.3	Low	Colourless	No odour	No sheen	Tap
OTH115	30/10/2024	1.61	726	5.35	146.5	346.5	464.64	32.3	Low	Colourless	No odour	No sheen	Tap
OTH120	30/10/2024	5.57	682	5.39	121.4	321.4	436.48	32.0	Low	Brown	No odour	No sheen	Tap

Note:
mg/l = miligrams per litre
°C = degrees celsisus
µS/cm = microsiemens per centremetre
mV = millivolts
Redox Corrected = Redox + 200
* Calculated value were TDS = EC*0.64

Appendix B - Table T6
Groundwater Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T6 - Groundwater Analytical Results

					Per- and Poly-fluoroalkyl Substances																												
					4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorundecanoic acid (PFUnDA)	Perfluoroctadecanoic acid (PFODA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	Sum of PFAS	Sum of PFOS and PFHxS	Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonate (PFOS)	Perfluorohexane sulfonate (PFHxS)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.05	0.05	0.05	0.05	0.02	0.02	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.1	0.05	0.05	0.05	0.05	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01
Human Health Guideline																																	
	PFAS NEMP 2025 Drinking water quality guideline																													**0.07**	**0.56**		
	PFAS NEMP 2025 Recreational water quality guideline																													2	10		
Ecological Guideline																																	
	PFAS NEMP 2025 Freshwater 99%																														*19*	*0.00023*	
Location Code	**Field ID**	**Date**	**Frequency**	**Lab Report Number**																													
MW104	**0990_MW104_241017**	**17 Oct 2024**	**Annual**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.05[#1]	<0.05[#1]	<0.12[#1]	2.64	1.52	0.07	7.87	1.73	1.13	<0.05[#1]	<0.05[#1]	<0.05[#1]	3.12	1.2	<0.12[#1]	<0.12[#1]	<0.12[#1]	<0.12[#1]	<0.05[#1]	<0.05[#1]	<0.05[#1]	91.8	**68.3**	**2.96**	*53.9*	14.4
MW106	**0990_MW106_241018**	**18 Oct 2024**	**Annual - Additional**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.07	0.03	<0.02	0.12	0.04	0.02	<0.02	<0.02	<0.02	0.07	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	1.45	**1.03**	0.04	*0.65*	0.38
MW107	**0990_MW107_241018**	**18 Oct 2024**	**Annual**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.66	**0.60**	0.01	*0.41*	0.19
MW109	**0990_MW109_241018**	**18 Oct 2024**	**Annual - Additional**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	0.02	<0.02	0.13	0.04	0.02	<0.02	<0.02	<0.02	0.15	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	2.30	**1.80**	0.04	*1.23*	0.57
MW109D	**0990_MW109D_241018**	**18 Oct 2024**	**Annual - Additional**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	0.03	<0.02	0.13	0.04	0.02	<0.02	<0.02	<0.02	0.08	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	2.20	**1.75**	0.04	*1.19*	0.56
MW110	**0990_MW110_241018**	**18 Oct 2024**	**Annual**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.20	0.07	<0.02	0.28	0.09	0.04	<0.02	<0.02	<0.02	0.17	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	5.26	**4.23**	0.11	*2.93*	1.30
MW111D	**0990_MW111D_241018**	**18 Oct 2024**	**Annual - Additional**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.18	0.05	<0.02	0.25	0.11	0.04	<0.02	<0.02	<0.02	0.16	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	4.59	**3.65**	0.09	*2.60*	1.05
MW111	**0990_MW111_241018**	**18 Oct 2024**	**Annual - Additional**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.23	0.05	<0.02	0.31	0.08	0.05	<0.02	<0.02	<0.02	0.16	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	4.32	**3.27**	0.10	*1.85*	1.42
MW118D	**0990_MW118D_241018**	**18 Oct 2024**	**Annual - Additional**	**ES2435779**	<0.05	0.06	<0.05	<0.05	<0.02	<0.02	<0.05	0.11	0.05	<0.02	0.14	0.06	0.02	<0.02	<0.02	<0.02	0.09	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	2.81	**2.19**	0.05	*1.47*	0.72
MW118I	**0990_MW118I_241018**	**18 Oct 2024**	**Annual - Additional**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.13	0.04	<0.02	0.16	0.07	0.04	<0.02	<0.02	<0.02	0.11	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	3.09	**2.44**	0.06	*1.62*	0.82
MW127	**0990_MW127_241018**	**19 Oct 2024**	**Annual**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.18	0.08	<0.02	0.28	0.07	0.04	<0.02	<0.02	<0.02	0.14	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	4.38	**3.45**	0.08	*2.34*	1.11
MW129	**0990_MW129_241019**	**19 Oct 2024**	**Annual**	**ES2435779**	<0.50[#1]	**2.05**	<0.50[#1]	<0.50[#1]	<0.50[#1]	<0.50[#1]	<1.25[#1]	54.0	65.6	<0.50[#1]	219	13.6	66.4	<0.50[#1]	<0.50[#1]	<0.50[#1]	63.6	45.6	<1.25[#1]	<1.25[#1]	<1.25[#1]	<1.25[#1]	<0.50[#1]	<0.50[#1]	<0.50[#1]	930	**326**	***56.2***	*192*	134
MW130	**0990_MW130_241018**	**18 Oct 2024**	**Annual - Additional**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.05	0.05	<0.01	*0.02*	0.03
MW131	**0990_MW131_241018**	**18 Oct 2024**	**Annual - Additional**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.03	0.03	<0.01	*0.01*	0.02
MW133	**0990_MW133_241101**	**01 Nov 2024**	**Annual - Alternative**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.03	0.03	<0.01	*0.01*	0.02
MW135	**0990_MW135_241021**	**21 Oct 2024**	**Annual**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.27	**0.20**	0.01	*0.12*	0.08
MW136	**0990_MW136_241020**	**20 Oct 2024**	**Annual - Additional**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.05	0.05	<0.01	*0.05*	<0.01
MW137	**0990_MW137_241020**	**20 Oct 2024**	**Annual**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.41	**0.35**	<0.01	*0.19*	0.16
MW140	**0990_MW140_241101**	**01 Nov 2024**	**Annual**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.30	**0.30**	<0.01	*0.17*	0.13
MW142	**0990_MW142_241019**	**19 Oct 2024**	**Annual**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.04	0.04	<0.01	*0.02*	0.02
MW144	**0990_MW144_241019**	**19 Oct 2024**	**Annual**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
MW146	**0990_MW146_241019**	**19 Oct 2024**	**Annual - Additional**	**ES2435779**	<0.10[#1]	<0.10[#1]	<0.10[#1]	<0.10[#1]	<0.10[#1]	<0.10[#1]	<0.25[#1]	3.52	1.49	<0.10[#1]	6.75	1.32	0.79	<0.10[#1]	<0.10[#1]	<0.10[#1]	3.72	1.3	<0.25[#1]	<0.25[#1]	<0.25[#1]	<0.25[#1]	<0.10[#1]	0.14	<0.10[#1]	93.8	**71.2**	**1.69**	47.8	23.4
MW149	**0990_MW149_241019**	**19 Oct 2024**	**Annual**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.05[#1]	<0.05[#1]	<0.12[#1]	15.7	4.79	0.13	20.4	8.08	3.01	0.11	<0.05[#1]	<0.05[#1]	13.6	3.9	<0.12[#1]	<0.12[#1]	<0.12[#1]	<0.12[#1]	<0.05[#1]	0.32	<0.05[#1]	336	**252**	**6.22**	*181*	70.8
MW231	**0990_MW231_241020**	**20 Oct 2024**	**Annual**	**ES2435779**	<0.50[#1]	10.4	1.22	<0.50[#1]	<0.50[#1]	<0.50[#1]	<1.25[#1]	97.2	81.9	3.13	372	42.9	81.5	<0.50[#1]	<0.50[#1]	<0.50[#1]	116	47.5	<1.25[#1]	<1.25[#1]	<1.25[#1]	<1.25[#1]	<0.50[#1]	<0.50[#1]	<0.50[#1]	1,730	**727**	***108***	*338*	389
MW244	**0990_MW244_241021**	**21 Oct 2024**	**Annual**	**ES2435779**	<0.05	3.79	<0.05	<0.05	<0.02	<0.02	<0.05	0.55	0.71	0.03	1.00	0.25	1.04	<0.02	<0.02	<0.02	0.31	0.3	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	18.1	**9.36**	**0.69**	*5.64*	3.72
MW278	**0990_MW278_241022**	**22 Oct 2024**	**Annual**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.43	0.09	<0.02	0.42	0.28	0.06	<0.02	<0.02	<0.02	0.36	0.2	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	13.8	**11.6**	0.20	*7.66*	3.94
MW285	**0990_MW285_241022**	**22 Oct 2024**	**Annual**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.51	**0.45**	<0.01	*0.20*	0.25
MW400	**0990_MW400_241019**	**19 Oct 2024**	**Annual**	**ES2435779**	<0.05	**0.12**	<0.05	<0.05	<0.02	<0.02	<0.05	0.12	**0.03**	<0.02	**0.11**	**0.07**	<0.02	<0.02	<0.02	<0.02	0.09	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	2.83	**2.21**	0.04	*1.51*	0.70
MW403	**0990_MW403_241209**	**09 Dec 2024**	**Annual**	**ES2440429**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	**<0.02**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.02	**0.02**	<0.01	*0.02*	<0.01
MW801S	**0990_MW801S_241018**	**18 Oct 2024**	**Annual - Additional**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.63	**0.54**	0.01	*0.39*	0.15
MW802D	**0990_MW802D_241019**	**19 Oct 2024**	**Annual - Additional**	**ES2435779**	<0.05	0.10	<0.05	<0.05	<0.02	<0.02	<0.05	0.27	0.14	<0.02	0.67	0.13	0.13	<0.02	<0.02	<0.02	0.22	0.2	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	6.27	**4.11**	0.22	*2.87*	1.24
MW802I	**0990_MW802I_241019**	**19 Oct 2024**	**Annual - Additional**	**ES2435779**	<0.10[#1]	0.15	<0.10[#1]	<0.10[#1]	<0.10[#1]	<0.10[#1]	<0.25[#1]	3.41	1.96	<0.10[#1]	8.83	1.63	1.73	<0.10[#1]	<0.10[#1]	<0.10[#1]	3.52	1.7	<0.25[#1]	<0.25[#1]	<0.25[#1]	<0.25[#1]	<0.10[#1]	0.20	<0.10[#1]	104	**76.5**	**3.04**	*57.4*	19.1
MW802S	**0990_MW802S_241019**	**19 Oct 2024**	**Annual**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	2.45	0.68	<0.02	2.40	0.25	0.32	<0.02	<0.02	<0.02	2.13	0.8	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	19.0	**8.91**	0.34	*2.61*	6.30
MW803D	**0990_MW803D_241017**	**17 Oct 2024**	**Annual - Additional**	**ES2435779**	<0.50[#1]	<0.50[#1]	<0.50[#1]	<0.50[#1]	<0.50[#1]	<0.50[#1]	<1.25[#1]	27.6	21.0	3.00	81.8	20.3	16.2	<0.50[#1]	<0.50[#1]	<0.50[#1]	40.6	21.2	<1.25[#1]	<1.25[#1]	<1.25[#1]	<1.25[#1]	<0.50[#1]	<0.50[#1]	<0.50[#1]	8,460	**8,170**	***28.8***	*8,020*	154
MW803I	**0990_MW803I_241017**	**17 Oct 2024**	**Annual - Additional**	**ES2435779**	<0.10[#1]	0.50	<0.10[#1]	<0.10[#1]	<0.10[#1]	<0.10[#1]	<0.25[#1]	9.30	4.94	0.11	22.8	3.57	3.86	<0.10[#1]	<0.10[#1]	<0.10[#1]	11.7	4.1	<0.25[#1]	<0.25[#1]	<0.25[#1]	<0.25[#1]	<0.10[#1]	<0.10[#1]	<0.10[#1]	150	**78.7**	**5.09**	*40.8*	37.9
MW803S	**0990_MW803S_241017**	**17 Oct 2024**	**Annual - Additional**	**ES2435779**	<0.10[#1]	2.49	<0.10[#1]	<0.10[#1]	<0.10[#1]	<0.10[#1]	<0.25[#1]	42.6	27.9	0.76	136	21.8	31.0	<0.10[#1]	<0.10[#1]	<0.10[#1]	44.3	13.4	<0.25[#1]	<0.25[#1]	<0.25[#1]	<0.25[#1]	<0.10[#1]	<0.10[#1]	<0.10[#1]	740	**351**	50.0	*157*	194
OTH111	**0990_OTH111_241018**	**18 Oct 2024**	**Annual**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
OTH112	**0990_OTH112_241023**	**23 Oct 2024**	**Annual**	**ES2435779**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
OTH113	**0990_OTH113_241107**	**07 Nov 2024**	**Annual**	**ES2436471**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.19	**0.19**	<0.01	*0.11*	0.08
POT111	**0990_POT111_241030**	**30 Oct 2024**	**Annual**	**ES2435724**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01
OTH114	**0990_OTH114_241030**	**30 Oct 2024**	**Biannual**	**ES2435728**	<0.05	**0.08**	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	**0.21**	**0.13**	<0.01	*0.08*	**0.05**
OTH120	**0990_OTH120_241030**	**30 Oct 2024**	**Biannual**	**ES2435730**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01

Note:
µg/L: micrograms per litre
LOR: Limit of Reporting

Appendix B - Table 7
Biota Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table 7 - Biota Analytical Results

							Biota	Per- and Poly-fluoroalkyl Substances															
							Weight of Sample Prepared	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorononanesulfonic acid (PFNS)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)
							g	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR							0.1	0.00005	0.00005	0.00005	0.00005	0.00005	0.00005	0.0001	0.002	0.00005	0.0001	0.00005	0.0001	0.0001	0.0001	0.00005	0.0001
Department of Health 2019 - Intake - Food - Fish																							
Department of Health 2019 - Intake - Food - Crusteaceans																							
Location Code	**Field ID**	**Date**	**Sample Type**	**Lab Report Number**	**Matrix Description**	**Sample Comments**																	
BIO078																							
	0990_BIOAFA501_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Barramundi (Lates calcarifer)**	**left fillet**	144	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_QC157_241015	**15 Oct 2024**	**Intra-lab Duplicate**	**ES2434947**	**Barramundi (Lates calcarifer)**	**right fillet**	109	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_QC209_241016	**16 Oct 2024**	**Inter-lab Duplicate**	**RN1449010**	**Barramundi (Lates calcarifer)**	**right fillet**	-	<0.00005#1	<0.00005#1	<0.00005#1	<0.00005#1	<0.00005#1	<0.00005#1	<0.0001#1	-	<0.00005#1	<0.0001#1	<0.00005#1	<0.0001#1	<0.0001#1	<0.0001#1	<0.00005#1	<0.0001#1
	0990_BIOAFA502_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Barramundi (Lates calcarifer)**	**left fillet**	76.3	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_QC158_241015	**15 Oct 2024**	**Intra-lab Duplicate**	**ES2434947**	**Barramundi (Lates calcarifer)**	**right fillet**	51.8	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_QC210_241016	**16 Oct 2024**	**Inter-lab Duplicate**	**RN1449010**	**Barramundi (Lates calcarifer)**	**right fillet**	-	<0.00005#1	<0.00005#1	<0.00005#1	<0.00005#1	<0.00005#1	<0.00005#1	<0.0001#1	-	<0.00005#1	<0.0001#1	<0.00005#1	<0.0001#1	<0.0001#1	0.00012#1	<0.00005#1	<0.0001#1
	0990_BIOAFA503_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Barramundi (Lates calcarifer)**	**left fillet**	53.9	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_QC159_241015	**15 Oct 2024**	**Intra-lab Duplicate**	**ES2434947**	**Barramundi (Lates calcarifer)**	**right fillet**	77.3	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA504_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Barramundi (Lates calcarifer)**	**left fillet**	36.2	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_QC160_241015	**15 Oct 2024**	**Intra-lab Duplicate**	**ES2434947**	**Barramundi (Lates calcarifer)**	**right fillet**	52.7	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA505_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Sooty Grunter / Black Bream (Hephaestus fuliginosus)**	**left fillet**	61.6	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA506_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Sooty Grunter / Black Bream (Hephaestus fuliginosus)**	**left and right fillet**	56.7	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA507_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Sooty Grunter / Black Bream (Hephaestus fuliginosus)**	**left and right fillet**	34.0	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA508_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Mullet (Planiliza ordensis)**	**left fillet**	46.9	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA509_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Bony Bream (Nematalosa erebi)**	**left fillet**	51.8	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA510_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Bony Bream (Nematalosa erebi)**	**left and right fillet**	68.3	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA511_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Bony Bream (Nematalosa erebi)**	**left and right fillet**	59.5	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA512_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Sleepy Cod (Oxyeleotris lineolata)**	**left fillet**	38.2	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA513_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Sleepy Cod (Oxyeleotris lineolata)**	**whole minus guts, head and tail**	7.5	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA514_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Sleepy Cod (Oxyeleotris lineolata)**	**whole minus guts, head and tail**	1.9	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA515_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Blue Catfish (Neoarius graeffei)**	**left fillet**	67.8	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA516_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Berney's Catfish (Neoarius berneyi)**	**left fillet**	44.2	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA517_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Berney's Catfish (Neoarius berneyi)**	**left and right fillet**	41.2	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA518_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Berney's Catfish (Neoarius berneyi)**	**whole minus guts, head and tail**	4.6	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA519_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Black Catfish (Neosilurus ater)**	**right fillet**	47.1	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA520_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Black Catfish (Neosilurus ater)**	**left fillet**	42.6	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA521_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Black Catfish (Neosilurus ater)**	**left fillet**	36.1	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA522_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Cherabin (Macrobrachium spinipes)**	**whole fish**	10.7	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA523_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Cherabin (Macrobrachium spinipes)**	**whole fish**	8.6	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA524_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Cherabin (Macrobrachium spinipes)**	**whole fish**	4.2	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
BIO088																							
	0990_BIOAFA485_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Barramundi (Lates calcarifer)**	**left fillet**	136	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_QC207_241015	**15 Oct 2024**	**Inter-lab Duplicate**	**RN1449010**	**Barramundi (Lates calcarifer)**	**right fillet**	-	<0.00005#1	<0.00005#1	<0.00005#1	<0.00005#1	<0.00005#1	<0.00005#1	<0.0001#1	-	<0.00005#1	<0.0001#1	<0.00005#1	<0.0001#1	<0.0001#1	<0.0001#1	<0.00005#1	<0.0001#1
	0990_BIOAFA486_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Barramundi (Lates calcarifer)**	**left fillet**	69.4	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_QC208_241015	**15 Oct 2024**	**Inter-lab Duplicate**	**RN1449010**	**Barramundi (Lates calcarifer)**	**right fillet**	-	<0.00005#1	<0.00005#1	<0.00005#1	<0.00005#1	<0.00005#1	<0.00005#1	<0.0001#1	-	<0.00005#1	<0.0001#1	<0.00005#1	<0.0001#1	<0.0001#1	<0.0001#1	<0.00005#1	<0.0001#1
	0990_BIOAFA487_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Barramundi (Lates calcarifer)**	**left fillet**	73.6	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA488_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Barramundi (Lates calcarifer)**	**left fillet**	59.8	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA489_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Sooty Grunter / Black Bream (Hephaestus fuliginosus)**	**left fillet**	58.8	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA490_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Sooty Grunter / Black Bream (Hephaestus fuliginosus)**	**left fillet**	63.7	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA491_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Sooty Grunter / Black Bream (Hephaestus fuliginosus)**	**left fillet**	36.9	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA492_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Mullet (Planiliza ordensis)**	**left fillet**	74.1	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA493_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Mullet (Planiliza ordensis)**	**left fillet**	42.3	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA494_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Sleepy Cod (Oxyeleotris lineolata)**	**left fillet**	48.8	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA495_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Bony Bream (Nematalosa erebi)**	**left fillet**	29.7	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA496_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Bony Bream (Nematalosa erebi)**	**left and right fillet**	50.2	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA497_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Bony Bream (Nematalosa erebi)**	**left and right fillet**	50.7	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA498_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Cherabin (Macrobrachium spinipes)**	**whole fish**	23.6	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA499_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Cherabin (Macrobrachium spinipes)**	**whole fish**	10.2	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
	0990_BIOAFA500_241015	**15 Oct 2024**	**Normal**	**ES2434947**	**Cherabin (Macrobrachium spinipes)**	**whole fish**	11.1	<0.002	<0.002	<0.002	<0.002	<0.001	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002

Appendix B - Table 7
Biota Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table 7 - Biota Analytical Results

							Per- and Poly-fluoroalkyl Substances																	
							Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	PFOS - Branched	PFOS - Linear	Sum of PFAS	Sum of PFHxS and PFOS	Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonate (PFOS)	Perfluorohexane sulfonate (PFHxS)
							mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR							0.00005	0.00005	0.00005	0.0001	0.005	0.002	0.002	0.002	0.0001	0.0001	0.0001	0.001	0.001	0.001	0.001	0.00005	0.0001	0.0001
Department of Health 2019 - Intake - Food - Fish																					**0.052**	**0.041**	**0.0052**	**0.0052**
Department of Health 2019 - Intake - Food - Crusteaceans																					*0.065*	*0.52*	*0.065*	*0.065*
Location Code	**Field ID**	**Date**	**Sample Type**	**Lab Report Number**	**Matrix Description**	**Sample Comments**																		
BIO078																								
	0990_BIOAFA501_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Barramundi (Lates calcarifer)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.001**	**0.012**	**0.013**	**0.013**	<0.001	**0.013**	<0.001
	0990_QC157_241015	**15 Oct 2024**	**Intra-lab Duplicate**	**ES2434947**	**Barramundi (Lates calcarifer)**	**right fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.002**	**0.01**	**0.012**	**0.012**	<0.001	**0.012**	<0.001
	0990_QC209_241016	**16 Oct 2024**	**Inter-lab Duplicate**	**RN1449010**	**Barramundi (Lates calcarifer)**	**right fillet**	<0.00005#1	<0.00005#1	<0.00005#1	<0.0001#1	-	-	-	-	<0.0001#1	<0.0001#1	<0.0001#1	-	-	-	-	<0.00005#1	**0.018**	<0.0001#1
	0990_BIOAFA502_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Barramundi (Lates calcarifer)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.001**	**0.01**	**0.011**	**0.011**	<0.001	**0.011**	<0.001
	0990_QC158_241015	**15 Oct 2024**	**Intra-lab Duplicate**	**ES2434947**	**Barramundi (Lates calcarifer)**	**right fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.002**	**0.01**	**0.012**	**0.012**	<0.001	**0.012**	<0.001
	0990_QC210_241016	**16 Oct 2024**	**Inter-lab Duplicate**	**RN1449010**	**Barramundi (Lates calcarifer)**	**right fillet**	<0.00005#1	<0.00005#1	<0.00005#1	<0.0001#1	-	-	-	-	<0.0001#1	<0.0001#1	<0.0001#1	-	-	-	-	<0.00005#1	**0.014**	<0.0001#1
	0990_BIOAFA503_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Barramundi (Lates calcarifer)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.002**	**0.018**	**0.02**	**0.02**	<0.001	**0.02**	<0.001
	0990_QC159_241015	**15 Oct 2024**	**Intra-lab Duplicate**	**ES2434947**	**Barramundi (Lates calcarifer)**	**right fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.002**	**0.022**	**0.024**	**0.024**	<0.001	**0.024**	<0.001
	0990_BIOAFA504_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Barramundi (Lates calcarifer)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.003**	**0.021**	**0.024**	**0.024**	<0.001	**0.024**	<0.001
	0990_QC160_241015	**15 Oct 2024**	**Intra-lab Duplicate**	**ES2434947**	**Barramundi (Lates calcarifer)**	**right fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.002**	**0.028**	**0.03**	**0.03**	<0.001	**0.03**	<0.001
	0990_BIOAFA505_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Sooty Grunter / Black Bream (Hephaestus fuliginosus)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.001**	**0.015**	**0.016**	**0.016**	<0.001	**0.016**	<0.001
	0990_BIOAFA506_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Sooty Grunter / Black Bream (Hephaestus fuliginosus)**	**left and right fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.001**	**0.021**	**0.022**	**0.022**	<0.001	**0.022**	<0.001
	0990_BIOAFA507_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Sooty Grunter / Black Bream (Hephaestus fuliginosus)**	**left and right fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.002**	**0.023**	**0.025**	**0.025**	<0.001	**0.025**	<0.001
	0990_BIOAFA508_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Mullet (Planiliza ordensis)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	<0.001	**0.084**	**0.083**	**0.083**	<0.001	**0.083**	<0.001
	0990_BIOAFA509_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Bony Bream (Nematalosa erebi)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.002**	**0.039**	**0.041**	**0.041**	<0.001	**0.041**	<0.001
	0990_BIOAFA510_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Bony Bream (Nematalosa erebi)**	**left and right fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	<0.001	**0.066**	**0.066**	**0.066**	<0.001	**0.066**	<0.001
	0990_BIOAFA511_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Bony Bream (Nematalosa erebi)**	**left and right fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	<0.001	**0.039**	**0.039**	**0.039**	<0.001	**0.039**	<0.001
	0990_BIOAFA512_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Sleepy Cod (Oxyeleotris lineolata)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.002**	**0.022**	**0.024**	**0.024**	<0.001	**0.024**	<0.001
	0990_BIOAFA513_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Sleepy Cod (Oxyeleotris lineolata)**	**whole minus guts, head and tail**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.004**	**0.035**	**0.039**	**0.039**	<0.001	**0.039**	<0.001
	0990_BIOAFA514_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Sleepy Cod (Oxyeleotris lineolata)**	**whole minus guts, head and tail**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.006**	**0.057**	**0.063**	**0.063**	<0.001	**0.063**	<0.001
	0990_BIOAFA515_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Blue Catfish (Neoarius graeffei)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.001**	**0.023**	**0.024**	**0.024**	<0.001	**0.024**	<0.001
	0990_BIOAFA516_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Berney's Catfish (Neoarius berneyi)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.003**	**0.032**	**0.035**	**0.035**	<0.001	**0.035**	<0.001
	0990_BIOAFA517_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Berney's Catfish (Neoarius berneyi)**	**left and right fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.002**	**0.023**	**0.025**	**0.025**	<0.001	**0.025**	<0.001
	0990_BIOAFA518_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Berney's Catfish (Neoarius berneyi)**	**whole minus guts, head and tail**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.005**	**0.089**	**0.096**	**0.096**	<0.001	**0.094**	0.002
	0990_BIOAFA519_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Black Catfish (Neosilurus ater)**	**right fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.008**	**0.073**	**0.084**	**0.084**	<0.001	**0.081**	0.003
	0990_BIOAFA520_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Black Catfish (Neosilurus ater)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.004**	**0.088**	**0.094**	**0.094**	<0.001	**0.092**	0.002
	0990_BIOAFA521_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Black Catfish (Neosilurus ater)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.004**	**0.052**	**0.058**	**0.058**	<0.001	**0.056**	0.002
	0990_BIOAFA522_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Cherabin (Macrobrachium spinipes)**	**whole fish**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.001**	**0.013**	**0.015**	**0.015**	<0.001	0.014	0.001
	0990_BIOAFA523_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Cherabin (Macrobrachium spinipes)**	**whole fish**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	<0.001	**0.015**	**0.016**	**0.016**	<0.001	0.015	0.001
	0990_BIOAFA524_241016	**16 Oct 2024**	**Primary**	**ES2434947**	**Cherabin (Macrobrachium spinipes)**	**whole fish**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.001**	**0.022**	**0.025**	**0.025**	<0.001	0.023	0.002
BIO088																								
	0990_BIOAFA485_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Barramundi (Lates calcarifer)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.003**	**0.012**	**0.015**	**0.015**	<0.001	**0.015**	<0.001
	0990_QC207_241015	**15 Oct 2024**	**Inter-lab Duplicate**	**RN1449010**	**Barramundi (Lates calcarifer)**	**right fillet**	<0.00005#1	<0.00005#1	<0.00005#1	<0.0001#1	-	-	-	-	<0.0001#1	<0.0001#1	<0.0001#1	-	-	-	-	<0.00005#1	**0.014**	<0.0001#1
	0990_BIOAFA486_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Barramundi (Lates calcarifer)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.002**	**0.009**	**0.011**	**0.011**	<0.001	**0.011**	<0.001
	0990_QC208_241015	**15 Oct 2024**	**Inter-lab Duplicate**	**RN1449010**	**Barramundi (Lates calcarifer)**	**right fillet**	<0.00005#1	<0.00005#1	<0.00005#1	<0.0001#1	-	-	-	-	<0.0001#1	<0.0001#1	<0.0001#1	-	-	-	-	<0.00005#1	**0.012**	<0.0001#1
	0990_BIOAFA487_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Barramundi (Lates calcarifer)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.004**	**0.02**	**0.024**	**0.024**	<0.001	**0.024**	<0.001
	0990_BIOAFA488_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Barramundi (Lates calcarifer)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.006**	**0.026**	**0.032**	**0.032**	<0.001	**0.032**	<0.001
	0990_BIOAFA489_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Sooty Grunter / Black Bream (Hephaestus fuliginosus)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.002**	**0.006**	**0.008**	**0.008**	<0.001	**0.008**	<0.001
	0990_BIOAFA490_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Sooty Grunter / Black Bream (Hephaestus fuliginosus)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.004**	**0.013**	**0.017**	**0.017**	<0.001	**0.017**	<0.001
	0990_BIOAFA491_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Sooty Grunter / Black Bream (Hephaestus fuliginosus)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	<0.001	**0.004**	**0.004**	**0.004**	<0.001	0.004	<0.001
	0990_BIOAFA492_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Mullet (Planiliza ordensis)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.014**	**0.089**	**0.103**	**0.103**	<0.001	**0.103**	<0.001
	0990_BIOAFA493_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Mullet (Planiliza ordensis)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.012**	**0.069**	**0.081**	**0.081**	<0.001	**0.081**	<0.001
	0990_BIOAFA494_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Sleepy Cod (Oxyeleotris lineolata)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.001**	**0.014**	**0.015**	**0.015**	<0.001	**0.015**	<0.001
	0990_BIOAFA495_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Bony Bream (Nematalosa erebi)**	**left fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.004**	**0.023**	**0.027**	**0.027**	<0.001	**0.027**	<0.001
	0990_BIOAFA496_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Bony Bream (Nematalosa erebi)**	**left and right fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.004**	**0.024**	**0.028**	**0.028**	<0.001	**0.028**	<0.001
	0990_BIOAFA497_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Bony Bream (Nematalosa erebi)**	**left and right fillet**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.004**	**0.026**	**0.03**	**0.03**	<0.001	**0.03**	<0.001
	0990_BIOAFA498_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Cherabin (Macrobrachium spinipes)**	**whole fish**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.003**	**0.008**	**0.011**	**0.011**	<0.001	0.011	<0.001
	0990_BIOAFA499_241015	**15 Oct 2024**	**Primary**	**ES2434947**	**Cherabin (Macrobrachium spinipes)**	**whole fish**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.003**	**0.015**	**0.018**	**0.018**	<0.001	0.018	<0.001
	0990_BIOAFA500_241015	**15 Oct 2024**	**Normal**	**ES2434947**	**Cherabin (Macrobrachium spinipes)**	**whole fish**	<0.002	<0.001	<0.001	<0.005	<0.005	<0.002	<0.002	<0.002	<0.001	<0.005	<0.001	**0.004**	**0.037**	**0.042**		<0.001	0.041	0.001

DRAFT

Appendix C

Calibration Certificates & Field Logs

ANZ

FQM - Groundwater Sampling and Purging Record

AECOM

Q4AN(EV)-405-FM1

Project Name:	PFAS SAMP	Project Number:	60612561	PM Name:	[redacted]	Surface Water/Groundwater:	
Client:	DoD	Project Location:	TDI	Fieldwork Staff:		Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	☐ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☐ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Date	Location ID	QAQC	Turbidity (NTU)	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
19/08/22	SW153	–	–	2.91	825	6.84	109.3	30.4	Colourless low turb, no ns mod flow people.
	SW10K	QC100/200	–	4.62	1910.9	7.13	103	28.3	Light brown, mod turb, no ns, mod flow
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						QA/QC Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
			x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic		

Approval and Distribution

[redacted]

AECOM

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	PFASOMP	Project Number:	60676801	PM Name:	[redacted]	Surface Water/Groundwater:	GW
Client:	DoD	Project Location:	TDL + Katherine	Fieldwork Staff:	[redacted]	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.: YSI Pro	☑ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model: B	☑ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / (N)	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☑ Other (specify) TAP	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☑ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Location ID	Date	Time	QA/QC	Turbidity (NTU)	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
POT198	16/10/24	9:27	–	–	4.40	798	7.03	96.4	30.2	Colourless, low tb, NO, NS.
POT121	"	9:55	–	–	4.18	744	7.74	96.6	30.3	"
OTH118	"	16:03	–	–	3.36	784	7.13	89.5	32.0	"
POT127	"	16:10	–	–	2.29	1027	7.15	85.5	48.7	"
POT125	"	16:15	–	–	4.52	758	7.76	103.5	30.9	
POT124	17.10.24	07:35	–	–	3.33	715	5.92	142.3	29.7	
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C		± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected			QA/QC Information	Field Commets
Field Filtered:	Unfiltered: 12	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic		NO - no odour
		12 20ml PFAS				NS - no sheen
[redacted]						tb - turbidity

ANZ

FQM - Groundwater Sampling and Purging Record

AECOM

Q4AN(EV)-405-FM1

Project Name:	PFASOMP	Project Number:	60676801	PM Name:	[redacted]	Surface Water/Groundwater:	GW
Client:	DoD	Project Location:	TDL + Katherine	Fieldwork Staff:	[redacted]	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.: 451 Pro	☑ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model: B	☑ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / (N)	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify) TAP	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☑ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Location ID	Date	Time	QA/QC	Turbidity (NTU)	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
POT239	15/10/24	9:59	–	–	4.67	32.4	7.99	69.8	28.1	clear, odourless, NO, NS – Rain water
POT112	15/10/24	10:30	100/200	–	2.94	774	6.76	93.3	30.4	Clear, colourless, NO, NS
POT113	"	11:05	–	–	3.39	832	6.87	95.0	31.1	"
POT128	"	11:20	–	–	4.16	752	7.30	91.4	30.6	"
POT129	"	12:40	–	–	4.22	764	7.28	94.2	30.7	"
OTH019	"	13:03	–	–	3.96	894	7.17	97.6	33.0	"
POT126	"	15:51	–	–	3.56	780	7.19	94.8	32.3	"
POT131	"	16:04	–	–	3.50	735	7.67	92.4	37.5	"
OTH117	"	17:22	–	–	3.74	747	7.20	93.0	29.8	"
POT130	16/10/24	7:30	101/201	–	4.04	756	7.41	82.6	30.3	"
POT201		9:00	–	–	3.51	798	7.39	93.8	30.8	"
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C		± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						QA/QC Information
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)	QC100, 200
	22		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic	101, 201
		22	20mL PFAS					

[redacted]

Field Commets

Bore volume calculation, bore condition, fate of tubing, redox correction etc.

NO – no odour

NS – no sheen

Clear = low turbidity

ANZ

FQM - NAPL and Groundwater Level Gauging Record

AECOM

Q4AN(EV)-414-FM1

Project Name:	RMAP/OMP	**Project Location:**	Tindal	**PM Name:**	[redacted]
Project Number:	60676801	**Client:**	DoD	**Fieldwork Staff Name:**	

Confirm NAPL and groundwater levels by repeat measurements. All columns must be completed. If NAPL is not present in a well write 'ND' (Not Detected) in the relevant column.

Field Data

Well ID	Date (dd/mm/yy)	Time (24hr:mm)	HS Install (m)	Depth to LNAPL (mBTOC)	Depth to Groundwater (mBTOC)	LNAPL Thickness (m)	Depth to DNAPL (mBTOC)	Total Well Depth (mBTOC)	DNAPL Thickness (m)	Comments (well condition, odour, NAPL colour and viscosity)
MW404	11/11/24	8:51	10.510		7.510					GC, NO, NS possible blockage at bottom OK
MW231	"	9:14	10.555		7.555					
MW803S	"	9:17	10.575		7.575					Stop @ 9.5-10m (sediment?) DL - organic odour
MW803I	"	9:26	14		7.595					GC, NO, NS
MW803D	"	10:48	20		7.598					GC, NO, NS
MW120	"	12:30	12.58		9.828					GC, NO, NS
MW155	"	12:38	10.30		7.303					GC, NO, NS
MW203	12.11	12:06	10.270		7.270					NO, NS, GC
										"
MW231	12.11	12:20			7.561			[redacted]		
MW803D		13:00			7.643					
MW803I		13:10			8.406					
MW803S		13:20			7.838					
MW203		13:30			8.105					
MW155		13:45			7.486					
MW120		14:00			10.805					
MW404		14:15			7.641					

Measurement Equipment

Make & Model:		**Supplier:**	
Serial No.:		**Calibration Report Provided?**	

Notes/Comments

(PID) - photo ionisation detector; (ppm) - parts per million; (LNAPL) - light non-aqueous phase liquids; (DNAPL) - dense light non-aqueous phase liquid; (mBTOC) - metres below top of casing

[redacted]

ANZ

FQM - Groundwater Sampling and Purging Record

AECOM

Q4AN(EV)-405-FM1

Project Name:	PFA Sump	Project Number:	60612561	PM Name:	[redacted]	Sample Date:	7/11/24
Client:	DOD	Project Location:	Katherine	Fieldwork Staff:		Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	☐ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☐ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Location ID	Time	Type	QAQC?	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
OTH113	15:13	primary	QC100/200	1.71	911	5.62	59.7	42.5	Colourless, NO, NS
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected			QA/QC Information	Field Comments
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic		

[redacted]

ANZ

AECOM

FQM - NAPL and Groundwater Level Gauging Record

Q4AN(EV)-414-FM1

15/10

Project Name:	PMAP GMF	**Project Location:**	0990 Biannual GW	**PM Name:**	[redacted]
Project Number:	6067801	**Client:**	Defence	**Fieldwork Staff Name:**	

Confirm NAPL and groundwater levels by repeat measurements. All columns must be completed. If NAPL is not present in a well write 'ND' (Not Detected) in the relevant column.

Field Data

Well ID	Date (dd/mm/yy)	Time (24hr:mm)	HS Install (m)	Depth to LNAPL (mBTOC)	Depth to Groundwater (mBTOC)	LNAPL Thickness (m)	Depth to DNAPL (mBTOC)	Total Well Depth (mBTOC)	DNAPL Thickness (m)	Comments (well condition, odour, NAPL colour and viscosity)
MW104	15/10	0829	10.0		6.55			20.85		Clay on probe
MW803D		0943	20.0		7.45			25.64		
MW803I		0948	14.0		7.47			16.0		Grey clay on probe
MW803S		0954	9.0		7.44			11.0		
MW231		1002	10.0		7.44			23.8		Grey clay on Probe
MW106		1037	9.5		6.45			16.3		
MW107		1050	10		7.37			13.79		left open
MW109		1112	6.2		5.96			7.36		low water level
MW110		1126	8.0		5.145			12.0		
MW111I		1137	—		6.23			31.47		Guage only
MW111D		1141	46.0		6.50			7.50		
MW111S		1138	7.39		6.51			8.39		
MW801S		1156	8.0		4.93			11.54		Clay on Probe
MW130		1436	12.5		9.30			19.22		
MW117		1449	—		—			8.63		Dry
MW118S		1457	18.0		16.48			20.74		roots
MW118I		1502	31.0		16.76			36.0		
MW118D		1502	47.0		16.82			~ 50		
MW109D		1115	9.0		5.93			20.87		
MW801I	↓	1158	—		4.955			20.85		Guage only

Measurement Equipment

Make & Model:		**Supplier:**	
Serial No.:		**Calibration Report Provided?**	

Notes/Comments

(PID) - photo ionisation detector; (ppm) - parts per million; (LNAPL) - light non-aqueous phase liquids; (DNAPL) - dense light non-aqueous phase liquid; (mBTOC) - metres below top of casing

Approval and Distribution

[redacted]

Distribution: Project Central File

ANZ

FQM - NAPL and Groundwater Level Gauging Record

AECOM

Q4AN(EV)-414-FM1

Project Name:	GME	**Project Location:**	Biannual GW 0990	**PM Name:**	[redacted]
Project Number:	60676801	**Client:**	DoD	**Fieldwork Staff Name:**	[redacted]

Confirm NAPL and groundwater levels by repeat measurements. All columns must be completed. If NAPL is not present in a well write 'ND' (Not Detected) in the relevant column.

Field Data

Well ID	Date (dd/mm/yy)	Time (24hr:mm)	HS Install (m)	Depth to LNAPL (mBTOC)	Depth to Groundwater (mBTOC)	LNAPL Thickness (m)	Depth to DNAPL (mBTOC)	Total Well Depth (mBTOC)	DNAPL Thickness (m)	Comments (well condition, odour, NAPL colour and viscosity)
MW119	15/10/24	1526	–					7.00		Dry – clay/ termites?
MW403	15/10	1540	11.1		9.76			11.37		Low water level
MW140	15/10/24	0925	13		7.646					
MW135	15/10/24	1450	19.82		17.935			19.82		low water level – HS dropped to bottom

Measurement Equipment

Make & Model:		**Supplier:**	
Serial No.:		**Calibration Report Provided?**	

Notes/Comments

(PID) - photo ionisation detector; (ppm) - parts per million; (LNAPL) - light non-aqueous phase liquids; (DNAPL) - dense light non-aqueous phase liquid; (mBTOC) - metres below top of casing

Approval and Distribution

[redacted]

Distribution: Project Central File

16/10 Biannual GW

ANZ

FQM - NAPL and Groundwater Level Gauging Record

AECOM

Q4AN(EV)-414-FM1

Project Name:	PMAP	Project Location:	0990 Biannual GW	PM Name:	[redacted]
Project Number:	60676801	Client:	Defence	Fieldwork Staff Name:	[redacted]

Confirm NAPL and groundwater levels by repeat measurements. All columns must be completed. If NAPL is not present in a well write 'ND' (Not Detected) in the relevant col[redacted]

Field Data

Well ID	Date (dd/mm/yy)	Time (24hr:mm)	HS Install (m)	Depth to LNAPL (mBTOC)	Depth to Groundwater (mBTOC)	LNAPL Thickness (m)	Depth to DNAPL (mBTOC)	Total Well Depth (mBTOC)	DNAPL Thickness (m)	Comments (well condition, odour, NAPL colour and viscosity)
MW131	16/10/24	0743	10.0		8.66			15.27		Roots
MW133		0756	9.0		5.95			20.0		Clay + Roots – HS N/A
OTH 111		1027	4.6		17.79			–		
MW244		1046	14.5		11.49			21.0		Hydrocarbon odour, Gellat Substance
MW149		1117	11		5.75			17.5		
MW129		1126	8.5		5.12			19.5		
MW802S		1143	9.5		5.21			10.55		knocked over, well intact
MW802I		1149	13.5		5.14			15.34		
MW802D		1151	17.0		5.09			19.5		
MW146		1203	7.0		4.0			18.10		
MW127		1216	6.5		3.45			20		
MW278		1427	11.5		0.780			23.15		
MW285		1445	7.5		4.319			18.76		
MW144		0806	12		9.325					
MW142		0826	12		9.187					
~~MW~~ MW137		1017	15.29		13.294			20.10		
MW400		1045	33.0		9.824					
MW136		1130	18.0		11.722			25.40		

Measurement Equipment

Make & Model:		Supplier:	
Serial No.:		Calibration Report Provided?	

Notes/Comments

(PID) - photo ionisation detector; (ppm) - parts per million; (LNAPL) - light non-aqueous phase liquids; (DNAPL) - dense light non-aqueous phase liquid; (mBTOC) - metres below top of casing

Approval and Distribution

[redacted]

Distribution: Project Central File

17.10 Biannual GME

AECOM

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	PMAP	Project Number:	60676801	PM Name:	[redacted]	Surface Water/Groundwater:	GW
Client:	Defence	Project Location:	0990	Fieldwork Staff:	[redacted]	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	☐ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☐ Retrieved				Parameters

Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:	Total purged volume (L):

Water Quality Parameters

Location ID	Date	Time	QA/QC	Turbidity (NTU)	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
MW604	17.10	1415	—		1.93	400	6.72	48.5	33.0	NO Od, Tur, Clear
MW8035		1445			2.57	359	6.73	57.3	32.7	Sediment in HS, No od, Tur, Clear
MW8031		1455			2.11	1358	6.53	46.0	32.0	No od, tur, Clear
MW8031D		1510	100+200		1.49	548	6.77	28.9	32.6	"
MW403		1710			2.45	1101	7.10	77.6	32.9	" , HS 3/4 Full
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C		± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected					QA/QC Information	Field Commets
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous	x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
			x 40 mL Vial (H_2SO_4)		x 100 mL Amber	x 250 mL Plastic		

Approval and Distribution

[redacted]

18.10 GME

ANZ

FQM - Groundwater Sampling and Purging Record

AECOM

Q4AN(EV)-405-FM1

Project Name:	PMAP	Project Number:	60676801	PM Name:	[redacted]	Surface Water/Groundwater:	GW
Client:	Reference	Project Location:	0990	Fieldwork Staff:		Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	☐ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☐ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Location ID	Date	Time	QA/QC	Turbidity (NTU)	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
MW801	18.10	0830	–		1.82	911	6.49	89.8	31.6	No od, tur, Sheen. Sediment in HS
MW106		0855	–		1.64	811	6.69	77.2	31.7	No od, tur, Sheen. Clear, Some Sed
MW107		0920	–		2.10	858	6.72	17.2	31.7	Organic od. No tur, Sheen. Clear. Roots in HS
MW109		0940	–		2.95	899	6.63	-28.0	31.6	Organic od. No tur, sheen. Clear. low water
MW0912		1010	–		1.60	939	6.77	96.8	32.3	No od, tur, sheen. Clear
MW110		1030	101, 201		1.40	1000	6.68	113.4	31.3	Roots. No od, Sheen, tur.
MW1115		1050	–		0.80	1095	6.56	15.4	32.7	Low water, organic od. No tur, Sheen. Clear
MW1117		1110	–		0.92	993	6.84	26.3	32.7	Sediment. No od, tur, sheen. Clear
MW130		1215	–		2.19	948	6.75	142.3	31.1	Slight roots. No od, tur, sheen. Clear
MW118I		1455			2.28	910	6.74	31.8	32.0	Slight org od. No tur, Sheen. Clear
MW118D		1515			1.45	968	6.63	98.4	30.8	Org od, Sediment. No tur, Sheen. Clear
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C		± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected			QA/QC Information	Field Commets
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic		

[redacted]

18/19.10 GME

ANZ

FQM - Groundwater Sampling and Purging Record

AECOM

Q4AN(EV)-405-FM1

Project Name:	PMAP	Project Number:	60676801	PM Name:	[redacted]	Surface Water/Groundwater:	GW
Client:	Defence	Project Location:	12990	Fieldwork Staff:		Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	☐ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☐ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Location ID	Date	Time	QA/QC	Turbidity (NTU)	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
MW185	18.10	1440	—							No Sample - roots
~~[illegible]~~		~~[illegible]~~								
MW131		1555	—		1.58	870	6.70	47.3	30.9	Slightly tur. No od, Sheen.
OTH111		1624	—		2.07	845	6.85	52.4	31.4	No od, tur, sheen. Clear
MW224		1645	—							[redacted] Re-deploy 19.10
MW149	19.10	0820	—		1.75	720	7.14	51.1	30.2	Pipe hit. HS has gravel from pipe. No od, tur, Sheen.
MW129		0840	—		1.37	863	6.85	141.1	32.6	Some sed. No od, tur, Sheen. Clear
MW802S		0855	102+202		1.47	1577	7.23	126.7	31.8	No od, tur, Sheen. Clear
MW802I		0920	—		0.75	1065	6.86	158.5	32.4	"
MW802D		0930	—		0.60	944	6.85	67.1	32.4	"
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C		± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected			QA/QC Information	Field Commets
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic		
[redacted]						

19/20.10 GME

ANZ

AECOM

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	PMAP	Project Number:	60676801	PM Name:	[redacted]	Surface Water/Groundwater:	GW
Client:	Defence	Project Location:	0940	Fieldwork Staff:		Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	☐ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☐ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Location ID	Date	Time	QA/QC	Turbidity (NTU)	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
MW146	19.10	1000	–		1.44	792	6.82	64.9	30.0	No od, tur, sheen. Clear
MW127	↓	1030	–		0.62	784	6.71	58.7	31.2	"
MW400		1515	–		1.92	812	6.21	154.7	32.3	" Some sediment.
MW142		1600	–		1.17	848	6.62	116.6	30.7	Sand. No od, tur, sheen. Clear
MW149		1630	–		1.17	1320	6.72	141.6	30.0	No od, tur, sheen. Clear
~~Other~~	~~20.10~~	~~1015~~							~~BLW~~	
MW136	20.10	11:00			0.53	903	6.35	153.8	31.7	"
MW137		1200			2.17	978	6.74	133.7	31.7	"
MW231		1330			1.80	225.6	6.29	40.3	31.3	Turbid. No od, sheen. Grey clay
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C		± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected			QA/QC Information	Field Commets
Field Filtered:	Unfiltered:	☐ x 40 mL Vial (HCl)	☐ x 60 mL Ferrous	☐ x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		☐ x 40 mL Vial (H_2SO_4)	☐ x 100 mL Amber	☐ x 250 mL Plastic		

[redacted]

21.10

ANZ

FQM - Groundwater Sampling and Purging Record

AECOM

Q4AN(EV)-405-FM1

Project Name:	PMAP	Project Number:	60676801	PM Name:	[redacted]	Surface Water/Groundwater:	GW
Client:	Dexcace	Project Location:	0990	Fieldwork Staff:	[redacted]	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	☐ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☐ Retrieved				Parameters

Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:	Total purged volume (L):

Water Quality Parameters

Location ID	Date	Time	QA/QC	Turbidity (NTU)	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
MW244	21.10	8:00			1.65	805	6.76	-37.4	30.4	Hydrocarbon od, Sediment. Clear
MW135		0930	103+203		1.74	1101	6.76	56.6	30.5	Roots, low water. No od, tur, sheen.
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C		± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected			QA/QC Information	Field Commets
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic		

[redacted]

7Sign

ANZ

FQM - Groundwater Sampling and Purging Record

AECOM

Q4AN(EV)-405-FM1

Project Name:	PMAP	Project Number:	60576201	PM Name:	[redacted]	Surface Water/Groundwater:	GW
Client:	Defence	Project Location:	Q640	Fieldwork Staff:	[redacted]	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	☐ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☐ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Location ID	Date	Time	QA/QC	Turbidity (NTU)	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
MW278	22/10/24	12:10			2.13	311.5	6.71	183.8	33.7	SWL = 8.81m : low turb, NO, colourless
MW285	" "	12:40			1.52	780	6.84	185.1	34.7	SWL = 4.42 m : low turb, NO, colourless
									~~33.15~~	
OTH112	23/10/24				2.59	916	7.02	65.2	34.5	low turb, colourless, NO
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C		± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected			QA/QC Information	Field Commets
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)	rinsate -	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic	blank -	
[redacted]						

GME/PP 30.10 → 1.11

ANZ

FQM - Groundwater Sampling and Purging Record

AECOM

Q4AN(EV)-405-FM1

Project Name:	PMAP	Project Number:	60676801	PM Name:	[redacted]	Surface Water/Groundwater:	GW
Client:	Defence	Project Location:	0910	Fieldwork Staff:		Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	[redacted] Method	Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	☐ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☐ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Location ID	Date	Time	QA/QC	Turbidity (NTU)	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
Pot 114	30.10	1030	-	-	3.03	725	5.32	113.8	33.4	No od, no colour, no sheen.
Pot 111	↓	1100	100 + 200	-	5.34	744	5.39	99.4	36.1	"
Oth 120		1200	-	-	5.57	682	5.39	121.4	32.0	Brown, slightly turbid. No od, no sheen.
Oth 114		1230	-	-	2.11	748	5.08	145.7	33.3	No od, no sheen, no colour
Oth 115		1320	-	-	1.61	726	5.35	146.5	32.3	"
Pot 120	✓	1420	-	-	5.34	691	5.57	167.4	34.1	"
MW133	1.11	0830	-	-	1.33	653	5.33	83.6	30.4	Roots, brown, turbid. No sheen, no od
~~[illegible]~~		~~[illegible]~~							[illegible]	Gauge MW133 6.570, 9.23
MW140		1530			4.59	568	5.24	147.2	33.1	No od, clear, no sheen. Sediment
									MW140:	7.775, 17.70
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)	

Analytes Sampled for:		Bottles Collected			QA/QC Information	Field Commets
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic		

[redacted]

MW403 – Resample!

ANZ

FQM - NAPL and Groundwater Level Gauging Record

AECOM

Q4AN(EV)-414-FM1

Project Name:	60676801	Project Location:	60676801	PM Name:	[redacted]
Project Number:	PMAP GME	Client:	Defence	Fieldwork Staff Name:	

Confirm NAPL and groundwater levels by repeat measurements. All columns must be completed. If NAPL is not present in a well write 'ND' (Not Detected) in the relevant column [redacted]

Well ID	Date dd/mm/yy	Time 24hr:mm	HS Install (m)	Depth to LNAPL (mBTOC)	Depth to Groundwater (mBTOC)	LNAPL Thickness (m)	Depth to DNAPL (mBTOC)	Total Well Depth (mBTOC)	DNAPL Thickness (m)	Comments (well condition, odour, NAPL colour and viscosity)
MW403	9.12	1500	Grab Sample		9.989					No odour, Slightly turbid, Clear no sheen

Make & Model:		Supplier:	
Serial No.:		Calibration Report Provided?	

(PID) - photo ionisation detector; (ppm) - parts per million; (LNAPL) - light non-aqueous phase liquids; (DNAPL) - dense light non-aqueous phase liquid; (mBTOC) - metres below top of casing

Approval and Distribution [redacted]

9.12
Date

[redacted]

Distribution: Project Central File

AECOM

Sampling round: 202410_AECOM **Location:** TDL + Katherine **Project number & name:** 60676801 PFASamp

PM: [redacted] **Field staff:** [redacted] **Client:** DoD

Date	YSI #	Temp (°C)	pH 4		pH 7		DO (100%)		EC 1413 (µS/cm)		ORP (mV)		Initials
			Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	
16/7	B	30	4.00	4.01	7.01	7.01	100		1598	1598	229.0	229.3	[redacted]
17/7	B	30	3.93	4.01	7.07	6.99	100		1668	1598	238.9	218	
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						

Notes:

AECOM

Sampling round: October **Location:** Katherine 0990 **Project number & name:** PMAP GME 6067801

PM: [redacted] **Field staff:** [redacted] **Client:** Defence

Date	YSI #	Temp (°C)	pH 4		pH 7		DO (100%)		EC 1413 (µS/cm)		ORP (mV)		Initials
			Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	[redacted]
18.10	12D10138	25°C	4.01	–	7.10	–	100	–	1410	–	221	–	
19.10	"	30°C	4.18	4.01	7.01	–	100	–	1570	–	218	–	
20.10	"	26.9°C	4.02	–	7.02	–	100	–	1434	–	220.6	–	
21.10	"	27°C	4.02	–	7.02	–	100	–	1420	–	220	–	
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						

Notes:

GW / SW 30.10 0990

AECOM

Sampling round: **Location:** **Project number & name:**

PM: **Field staff:** **Client:**

Date	YSI #	Temp (°C)	pH 4		pH 7		DO (100%)		EC 1413 (µS/cm)		ORP (mV)		Initials
			Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	
30.10	? Black Box	27°C	4.01	–	7.04	–	100	–	420	–	220	–	[redacted]
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
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							100						
							100						
							100						
							100						

Notes:

AECOM

Sampling round: 202411_AECOM **Location:** Katherine **Project number & name:** PMAP/ OMP_ 60676801

PM: [redacted] **Field staff:** [redacted] **Client:** DoD

Date	YSI #	Temp (°C)	pH 4		pH 7		DO (100%)		EC 1413 (µS/cm)		ORP (mV)		Initials
			Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	[redacted]
11/11/24	13	30°	4.04	4.02	7.02	7.02	100	–	1648	1550	220	–	
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
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							100						
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							100						
							100						
							100						
							100						

Notes:

DRAFT

Appendix D

Data Validation Report

AECOM

DATA VALIDATION REPORT; WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801	**Date:**	27/05/2025
Site:	0990 – RAAF Base Tindal		
Matrix:	Water	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney & NMI Sydney	**Date:**	30/05/2025
Lab reference:	ES2420210, RN1433170* (*Secondary laboratory)		

Key Findings:

The analytical data can be used as a basis for interpretation.

Component		Outliers			Material impact on interpretation
		No	Yes	Comment	
Frequency of field quality assurance/quality control		✓			No
Number of tests requested/reported		✓			No
Sample handling/preservation/holding times			✓	1	No
Frequency of laboratory QA/QC			✓	2	No
Limits of reporting (LOR)		✓			No
Blank analysis	Field blank	✓			No
	Rinsate blank	✓			No
	Trip blank	✓			No
	Method blank	✓			No
Field intra-laboratory relative percent differences (RPDs)		✓			No
Field inter-laboratory RPDs			✓	3	No
Laboratory duplicate RPDs		✓			No
Matrix spike (MS) % recoveries		✓			No
Laboratory control spike (LCS) % recoveries		✓			No
Surrogate % recoveries		✓			No
Other comments		✓			No

Comments

1. Sample handling/ preservation/ holding times

Sample Preservation

The following laboratory batches were received outside of the recommended temperature range (≤6°C):

Batch Number	Temperature (°C)
ES2420210	14.8 °C
RN1433170	Chilled

Potential under reporting must be taken into consideration. However, the potential for under reporting is not considered to materially affect the interpretation of results due to the nature of PFAS not degrading via volatilisation. Further, the samples were received below the ambient groundwater temperature at the time of sampling (~30 °C) and the samples were immediately cooled upon collection.

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DATA VALIDATION REPORT; WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801	**Date:**	27/05/2025
Site:	0990 – RAAF Base Tindal		
Matrix:	Water	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney & NMI Sydney	**Date:**	30/05/2025
Lab reference:	ES2420210, RN1433170* (*Secondary laboratory)		

2. Frequency of laboratory QA/QC	Laboratory duplicate samples were not reported at the required frequency for PFAS (actual/expected rate (%)) (0.00%/10.00%). The precision of the data can be assessed as acceptable based on the field intra- and inter-laboratory duplicate RPDs which were reported at the required frequencies and within control limits.
3. Field inter-laboratory RPDs	Field inter-laboratory RPDs were reported within control limits, except for the following samples (higher concentration in **bold):** • **0990_SW108_240619** & 0990_QC200_240619 for PFHxS (40%) As concentrations of PFHxS for both samples are less than 10 x LOR, where precision is low and actual differences minor, the data is considered to be of an acceptable precision and these elevated RPDs are not considered to affect the interpretation of results against guidelines.

Data Validation Report
QA/QC Blanks
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

QA/QC Blanks

		Date	19 Jun 2024	19 Jun 2024	19 Jun 2024
		Sample Type	Rinsate	Field Blank	Trip Blank
		Lab Report Number	ES2420210	ES2420210	ES2420210
Analyte	Unit	LOR			
Per- and Poly-fluoroalkyl Substances					
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01
Perfluorooctane sulfonate (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01
Perfluorohexane sulfonate (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	<0.05
Perfluoropropanesulfonic acid (PFPrS)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorononanesulfonic acid (PFNS)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorohexadecanoic acid (PFHxDA)	µg/L	0.05	<0.05	<0.05	<0.05
Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02
Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	<0.01
Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01

Data Validation Report
Field RPDs
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Relative Percentage Difference

		Field ID	0990_SW108_240619	0990_QC100_240619		0990_SW108_240619	0990_QC200_240619	
		Location Code	SW108	SW108		SW108	SW108	
		Date	19 Jun 2024	19 Jun 2024		19 Jun 2024	19 Jun 2024	
		Lab Report Number	ES2420210	ES2420210	RPD	ES2420210	RN1433170	RPD
Analyte	Unit	LOR						
Per- and Poly-fluoroalkyl Substances								
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01[#1]	0
Perfluorooctane sulfonate (PFOS)	µg/L	0.01	0.04	0.05	22	0.04	0.033[#1]	19
Perfluorohexane sulfonate (PFHxS)	µg/L	0.01	0.03	0.03	0	0.03	0.02[#1]	40
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01	<0.05	<0.05	0	<0.05	<0.01[#1]	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.01	<0.05	<0.05	0	<0.05	<0.01[#1]	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.01	<0.05	<0.05	0	<0.05	<0.01[#1]	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.01	<0.05	<0.05	0	<0.05	<0.01[#1]	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01[#1]	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02[#1]	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.02	<0.05	<0.05	0	<0.05	<0.02[#1]	0
Perfluoropropanesulfonic acid (PFPrS)	µg/L	0.02	<0.02	<0.02	0	<0.02	-	-
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01[#1]	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02[#1]	0
Perfluorooctadecanoic Acid (PFODA)	µg/L	0.05	-	-	-	-	<0.05[#1]	-
Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01[#1]	0
Perfluorononanesulfonic acid (PFNS)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.01[#1]	0
Perfluorohexadecanoic acid (PFHxDA)	µg/L	0.02	<0.05	<0.05	0	<0.05	<0.02[#1]	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01[#1]	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01[#1]	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01[#1]	0
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01[#1]	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01[#1]	0
Perfluorodecanoic acid (PFDA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01[#1]	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01[#1]	0
Perfluorobutanoic acid (PFBA)	µg/L	0.05	<0.1	<0.1	0	<0.1	<0.05[#1]	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.02	<0.05	<0.05	0	<0.05	<0.02[#1]	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05[#1]	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.02	<0.05	<0.05	0	<0.05	<0.02[#1]	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05[#1]	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01[#1]	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01[#1]	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01[#1]	0

***RPDs have only been considered where a concentration is greater than 1 times the LOR.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each LOR multiplier range are: 30 (1 - 10 x LOR); 30 (10 - 30 x LOR); 30 (> 30 x LOR))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

AECOM

DATA VALIDATION REPORT; WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801	**Date:**	22/11/2024
Site:	0990 – RAAF Tindal		
Matrix:	Water	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney; ALS Brisbane	**Date:**	28/11/2024

Lab reference:

October 2024 Private Property:
ES2435725, ES2435722, ES2435721, ES2433855, ES2433854, ES2433853, ES2433852, ES2433851, ES2433850, ES2433848, ES2433847, ES2433846, ES2433845, ES2433844, ES2433843, ES2433842, ES2433841, ES2433840, ES2433839, ES2433838, ES2433837, EB2438420, EB2436756

October GME:
ES2435779, ES2435730, ES2435729, ES2435728, ES2435725, ES2435724, EB2438420, EB2438426

October SW:
ES2435723, EB2438417

Key Findings:

The analytical data can be used as a basis for interpretation, subject to the limitations outlined below:

- The potential exists for concentrations of PFOS to be below the LOR, but above the PFAS Freshwater 99% Species Protection guideline in all groundwater and surface water samples (with the exception of groundwater sample 0990_POT120_230726 which reported above the LOR and adopted guideline, and should be taken into consideration when interpreting results.
- The surface water and groundwater monitoring events were completed in conjunction with an ad-hoc groundwater sampling event which has been reported separately. Parent samples for the field intra-laboratory and inter-laboratory duplicates reflect these ad-hoc locations. The data validation has been assessed as an all-inclusive event.

Component		Outliers			Material impact on interpretation
		No	Yes	Comment	
Frequency of field quality assurance/quality control		✓			No
Number of tests requested/reported		✓			No
Sample handling/preservation/holding times			✓	1	No
Frequency of laboratory QA/QC			✓	2	No
Limits of reporting (LOR)			✓	3	No
Blank analysis	Field blank	✓			No
	Rinsate blank	✓			No
	Trip blank	✓			No
	Method blank	✓			No
Field intra-laboratory relative percent differences (RPDs)			✓	4	No
Field inter-laboratory RPDs			✓	5	No
Laboratory duplicate RPDs		✓			No
Matrix spike (MS) % recoveries		✓			No
Laboratory control spike (LCS) % recoveries		✓			No
Surrogate % recoveries		✓			No
Other comments		✓			No

Comments

DATA VALIDATION REPORT; WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801	**Date:**	22/11/2024
Site:	0990 – RAAF Tindal		
Matrix:	Water	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney; ALS, Brisbane	**Date:**	28/11/2024

Lab reference:

October 2024 Private Property:
ES2435725, ES2435722, ES2435721, ES2433855, ES2433854, ES2433853, ES2433852, ES2433851, ES2433850, ES2433848, ES2433847, ES2433846, ES2433845, ES2433844, ES2433843, ES2433842, ES2433841, ES2433840, ES2433839, ES2433838, ES2433837, EB2438420, EB2436756

October GME:
ES2435779, ES2435730, ES2435729, ES2435728, ES2435725, ES2435724, EB2438420, EB2438426

October SW:
ES2435723, EB2438417

1. Sample handling/ preservation/ holding times

The following laboratory batches were received outside of the recommended temperature range (≤6°C):

Batch Number	Temperature (°C)
ES2435725	9.2
ES2435721	9.3
ES2433855, ES2433854, ES2433853, ES2433852, ES243385, ES2433850, ES2433848, ES2433847, ES2433846, ES2433845, ES2433844, ES2433843, ES2433842, ES2433841, ES2433840, ES2433839, ES2433838, ES2433837	7.7
EB2438420	16.1
EB2436756	13.9
ES2435730	8.2
ES2435725	9.2
ES2435724	10.7
EB2438420	16.1
EB2438426	16.1
ES2435723	9.3
EB2438417	16.1

Potential under reporting must be taken into consideration. However, the potential for under reporting is not considered to materially affect the interpretation of results due to the nature of PFAS not degrading via volatilisation. Further, the samples were received below the ambient groundwater and surface water temperature at the time of sampling (~30 °C) and the samples were immediately cooled upon collection

DATA VALIDATION REPORT; WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801	**Date:**	22/11/2024
Site:	0990 – RAAF Tindal		
Matrix:	Water	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney; ALS Brisbane	**Date:**	28/11/2024
Lab reference:	October 2024 Private Property: ES2435725, ES2435722, ES2435721, ES2433855, ES2433854, ES2433853, ES2433852, ES2433851, ES2433850, ES2433848, ES2433847, ES2433846, ES2433845, ES2433844, ES2433843, ES2433842, ES2433841, ES2433840, ES2433839, ES2433838, ES2433837, EB2438420, EB2436756 October GME: ES2435779, ES2435730, ES2435729, ES2435728, ES2435725, ES2435724, EB2438420, EB2438426 October SW: ES2435723, EB2438417		

2. Frequency of laboratory QA/QC	Laboratory duplicate samples were not reported for at the required frequency for PFAS in primary batches ES2435725, ES2433855, ES2433854, ES2433853, ES2433852, ES2433851, ES2433850, ES2433848, ES2433847, ES2433846, ES2433845, ES2433844, ES2435779, ES2435730, ES2435729, ES2435728, ES2435724 and ES2435723. The precision of the data can be assessed as acceptable based on intra- and inter-laboratory duplicate RPDs which were reported at the required frequencies and within control limits. Matrix spikes were not reported at the required frequencies for PFAS method group in primary batches ES2435725, ES2433855, ES2433854, ES2433853, ES2433852, ES2433851, ES2433850, ES2433848, ES2433847, ES2433846, ES2433845, ES2433844, ES2435779, ES2435730, ES2435729, ES2435728, ES2435724 and ES2435723. The accuracy of the data can be assessed as acceptable based on method blanks, LCS and surrogate spike recoveries (which were reported at the required frequencies and within control limits), and available matrix spike recoveries for the same analytical method group (which were reported within control limits).

3.Limits of reporting	Limits of reporting (LOR) were sufficiently low to enable assessment against adopted guideline criteria, with the exception of PFOS in water. The potential exists for PFOS to be above the adopted PFAS Freshwater 99% Species Protection guideline (0.00023 µg/L), but below the laboratory LOR (0.01 µg/L) in all groundwater and surface water primary samples collected, excluding the following samples that have reported above the LOR and the guideline value • 0990_MW104_241017 • 0990_MW106_241018 • 0990_MW107_241018 • 0990_MW109_241018 • 0990_MW109D_241018 • 0990_MW110_241018 • 0990_MW111D_241018 • 0990_MW111S_241018 • 0990_MW118D_241018 • 0990_MW118I_241018 • 0990_MW127_241018 • 0990_MW129_241019 • 0990_MW130_241018 • 0990_MW131_241018 • 0990_MW133_241101 • 0990_MW135_241021 • 0990_MW136_241020 • 0990_MW137_241020 • 0990_MW140_241101 • 0990_MW142_241019 • 0990_MW146_241019 • 0990_MW149_241019 • 0990_MW231_241020 • 0990_MW244_241021 • 0990_MW278_241022 • 0990_MW285_241022 • 0990_MW400_241019 • 0990_MW403_241017 • 0990_MW801S_241018 • 0990_MW802D_241019 • 0990_MW802I_241019 • 0990_MW802S_241019 • 0990_MW803D_241017 • 0990_MW803I_241017 • 0990_MW803S_241017 • 0990_OTH114_241030 • 0990_POT112_241015 • 0990_POT113_241015 • 0990_POT120_241030 • 0990_POT121_241016 • 0990_SW100_241030 • 0990_SW108_241030 • 0990_SW153_241030 This should be taken into consideration when interpreting PFOS results against guidelines where results are reported below the LOR.
4. Field intra-laboratory relative percent differences (RPDs)	Field intra-laboratory RPDs were reported within control limits, with the exception of the following samples (higher concentration in **bold**):

DATA VALIDATION REPORT; WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801	**Date:**	22/11/2024
Site:	0990 – RAAF Tindal		
Matrix:	Water	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney; ALS Brisbane	**Date:**	28/11/2024

Lab reference:

October 2024 Private Property:
ES2435725, ES2435722, ES2435721, ES2433855, ES2433854, ES2433853, ES2433852, ES2433851, ES2433850, ES2433848, ES2433847, ES2433846, ES2433845, ES2433844, ES2433843, ES2433842, ES2433841, ES2433840, ES2433839, ES2433838, ES2433837, EB2438420, EB2436756

October GME:
ES2435779, ES2435730, ES2435729, ES2435728, ES2435725, ES2435724, EB2438420, EB2438426

October SW:
ES2435723, EB2438417

- 0990_POT112_241015 & **0990_QC100_241015** for Perfluoropentanoic acid (PFPeA)(40%)
- 0990_MW803D_241017 & **0990_QC100_241017** for 6:2 Fluorotelomer sulfonic acid (6:2 FTS) (67%)
- **0990_MW802S_241019** & 0990_QC102_241019 for Perfluorohexane sulfonate (PFHxS) (34%)
- 0990_MW135_241021 & **0990_QC103_241021** for Perfluorooctanoic Acid (PFOA) (67%)
- 0990_MW135_241021 & **0990_QC103_241021** for Perfluorooctane sulfonate (PFOS) (45%)

As there are no adopted guidelines for PFPeA, the RPD exceedances for this analyte is not expected to affect interpretation of results. However, the RPD exceedance for should be taken into considering when using PFPeA concentrations quantitatively.

As concentrations of PFHxS, PFOA and PFOS were reported well above or well below the adopted guidelines, the elevated RPDs are not considered to affect the interpretation of results against guidelines. However, as a conservation approach, the higher concentrations is to be used. The elevated RPDs are also to be taken into consideration when using the data quantitatively.

DATA VALIDATION REPORT; WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801	**Date:**	22/11/2024
Site:	0990 – RAAF Tindal		
Matrix:	Water	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney; ALS Brisbane	**Date:**	28/11/2024

Lab reference:

October 2024 Private Property:
ES2435725, ES2435722, ES2435721, ES2433855, ES2433854, ES2433853, ES2433852, ES2433851, ES2433850, ES2433848, ES2433847, ES2433846, ES2433845, ES2433844, ES2433843, ES2433842, ES2433841, ES2433840, ES2433839, ES2433838, ES2433837, EB2438420, EB2436756

October GME:
ES2435779, ES2435730, ES2435729, ES2435728, ES2435725, ES2435724, EB2438420, EB2438426

October SW:
ES2435723, EB2438417

5. Field inter-laboratory RPDs	Field inter-laboratory RPDs were reported within control limits, with the exception of the following samples (higher concentration in **bold**): • 0990_MW803D_241017 & **0990_QC200_241017** for PFOA (39%) • **0990_MW803D_241017** & 0990_QC200_241017 for PFHxS (149%) • 0990_MW803D_241017 & **0990_QC200_241017** for PFOS (45%) • 0990_MW803D_241017 & **0990_QC200_241017** for Perfluoropentane sulfonic acid (PFPeS) (38%) • 0990_MW803D_241017 & **0990_QC200_241017** for PFPeA (53%) • 0990_MW803D_241017 & **0990_QC200_241017** for Perflorohexanoic acid (PFHxA) (48%) • 0990_MW803D_241017 & **0990_QC200_241017** for Perfluoroheptane sulfonic acid (PFHpS) (56%) • 0990_MW803D_241017 & **0990_QC200_241017** for Perfluorobutane sulfonic acid (PFBS) (37%) • **0990_MW110_241018** & 0990_QC201_241018 for PFOA (32%) • **0990_MW110_241018** & 0990_QC201_241018 for PFPeS (35%) • **0990_MW110_241018** & 0990_QC201_241018 for PFPeA (80%) • **0990_MW802S_241019** & 0990_QC202_241019 for PFPeS (38%) • **0990_MW802S_241019** & 0990_QC202_241019 for PFHpS (42%) • **0990_MW802S_241019** & 0990_QC202_241019 for PFBA (46%) • 0990_MW135_241021 & **0990_QC203_241021** for PFOA (67%) • 0990_MW135_241021 & **0990_QC203_241021** for PFHxS (45%) • 0990_MW135_241021 & **0990_QC203_241021** for PFHxA (40%) As there are no adopted guidelines for PFPeS, PFPeA, PFHxA, PFHpS and PFBS, the RPD exceedances for these analytes are not expected to affect interpretation of results. However, the RPD exceedances for should be taken into considering when using concentrations quantitatively. As concentrations of PFHxS, PFOA and PFOS were reported well above or well below the adopted guidelines, the elevated RPDs are not considered to affect the interpretation of results against guidelines. However, as a conservation approach, the higher concentrations is to be used. The elevated RPDs are also to be taken into consideration when using the data quantitatively.

QAQC Blanks

				Per- and Poly-fluoroalkyl Substances																
				Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonate (PFOS)	Perfluorohexane sulfonate (PFHxS)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR				0.01	0.01	0.01	0.05	0.05	0.05	0.05	0.02	0.02	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Field ID	**Date**	**Sample Type**	**Lab Report Number**																	
0990_QC300_241015	15 Oct 2024	Rinsate	ES2433855	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC300_241017	17 Oct 2024	Rinsate	ES2435779	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC300_241030	30 Oct 2024	Rinsate	ES2435725	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC301_241016	16 Oct 2024	Rinsate	ES2433855	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC301_241018	19 Oct 2024	Rinsate	ES2435779	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC301_241101	01 Nov 2024	Rinsate	ES2435723	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC302_241019	19 Oct 2024	Rinsate	ES2435779	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC303_241020	20 Oct 2024	Rinsate	ES2435779	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC304_241021	21 Oct 2024	Rinsate	ES2435779	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC305_241022	22 Oct 2024	Rinsate	ES2435779	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC306_241023	28 Oct 2024	Rinsate	ES2435779	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC400_241015	15 Oct 2024	Field_B	ES2433855	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC400_241017	17 Oct 2024	Field_B	ES2435779	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC400_241030	30 Oct 2024	Field_B	ES2435725	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC401_241016	16 Oct 2024	Field_B	ES2433855	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC401_241018	19 Oct 2024	Field_B	ES2435779	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC401_241101	01 Nov 2024	Field_B	ES2435723	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC402_241019	19 Oct 2024	Field_B	ES2435779	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC403_241020	20 Oct 2024	Field_B	ES2435779	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC404_241021	21 Oct 2024	Field_B	ES2435779	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC405_241022	22 Oct 2024	Field_B	ES2435779	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC406_241023	28 Oct 2024	Field_B	ES2435779	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC500_241011	11 Oct 2024	Trip_B	ES2433855	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC500_241021	21 Oct 2024	Trip_B	ES2435779	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

QAQC Blanks

Field ID	Date	Sample Type	Lab Report Number	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR				0.02	0.02	0.02	0.1	0.05	0.05	0.05	0.05	0.02	0.02	0.02
0990_QC300_241015	15 Oct 2024	Rinsate	ES2433855	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC300_241017	17 Oct 2024	Rinsate	ES2435779	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC300_241030	30 Oct 2024	Rinsate	ES2435725	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC301_241016	16 Oct 2024	Rinsate	ES2433855	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC301_241018	19 Oct 2024	Rinsate	ES2435779	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC301_241101	01 Nov 2024	Rinsate	ES2435723	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC302_241019	19 Oct 2024	Rinsate	ES2435779	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC303_241020	20 Oct 2024	Rinsate	ES2435779	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC304_241021	21 Oct 2024	Rinsate	ES2435779	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC305_241022	22 Oct 2024	Rinsate	ES2435779	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC306_241023	28 Oct 2024	Rinsate	ES2435779	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC400_241015	15 Oct 2024	Field_B	ES2433855	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC400_241017	17 Oct 2024	Field_B	ES2435779	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC400_241030	30 Oct 2024	Field_B	ES2435725	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC401_241016	16 Oct 2024	Field_B	ES2433855	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC401_241018	19 Oct 2024	Field_B	ES2435779	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC401_241101	01 Nov 2024	Field_B	ES2435723	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC402_241019	19 Oct 2024	Field_B	ES2435779	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC403_241020	20 Oct 2024	Field_B	ES2435779	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC404_241021	21 Oct 2024	Field_B	ES2435779	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC405_241022	22 Oct 2024	Field_B	ES2435779	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC406_241023	28 Oct 2024	Field_B	ES2435779	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC500_241011	11 Oct 2024	Trip_B	ES2433855	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC500_241021	21 Oct 2024	Trip_B	ES2435779	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02

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Department of Defence - RAAF Base Tindal

Relative Percentage Differences

		Date	15 Oct 2024	17 Oct 2024		15 Oct 2024			16 Oct 2024			16 Oct 2024	15 Oct 2024	
		Field ID	0990_POT112_241015	0990_QC100_241015		0990_POT112_241015	0990_QC200_241015		0990_POT130_241016	0990_QC101_241016		0990_POT130_241016	0990_QC201_241016	
		Matrix Type	Water	Water		Water	Water		Water	Water		Water	Water	
		Sample Type	Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate		Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate	
		Lab Report Number	ES2433854	ES2433855	RPD	ES2433854	EB2436756	RPD	ES2433842	ES2433855	RPD	ES2433842	EB2436756	RPD
Analyte	Unit	LOR												
PFAS Full Suite														
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.02	0.06	0.07	15	0.06	0.08	29	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	0.02	0.03	**40**	0.02	0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Sum of PFAS	µg/L	0.01	0.26	0.30	14	0.26	0.28	7	<0.01	<0.01	0	<0.01	<0.01	0
Sum of PFHxS and PFOS	µg/L	0.01	0.18	0.20	11	0.18	0.18	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorononane sulfonate (PFNS)	mg/L	0.00002	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.14	0.16	13	0.14	0.14	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluoropropanesulfonic acid (PFPrS)	µg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.04	0.04	0	0.04	0.04	0	<0.01	<0.01	0	<0.01	<0.01	0

*RPDs have only been considered where a concentration is greater than 1 times the LOR.
**Elevated RPDs are highlighted as per QAQC Profile settings
(Acceptable RPDs for LOR multiplier range are:
30 (1 - 10 x LOR); 30 (10 - 30 x LOR); 30 (> 30 x LOR))
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.
Any methods in the row header relate to those used in the primary laboratory

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Field RPDs - Water
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Relative Percentage Differences

		Date	16 Oct 2024			17 Oct 2024			17 Oct 2024			18 Oct 2024	19 Oct 2024	
		Field ID	0990_SW151_241016	0990_QC156_241016		0990_MW803D_241017	0990_QC100_241017		0990_MW803D_241017	0990_QC200_20241017		0990_MW110_241018	0990_QC101_241018	
		Matrix Type	Water	Water		Water	Water		Water	Water		Water	Water	
		Sample Type	Primary	Intra-lab Duplicate		Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate		Primary	Intra-lab Duplicate	
		Lab Report Number	ES2434947	ES2434947	RPD	ES2435779	ES2435779	RPD	ES2435779	EB2438426	RPD	ES2435779	ES2435779	RPD
Analyte	Unit	LOR												
PFAS Full Suite														
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.50[#1]	<0.50[#1]	0	<0.50[#1]	<2.50[#1]	0	<0.05	<0.05	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.50[#1]	<0.50[#1]	0	<0.50[#1]	<2.50[#1]	0	<0.05	<0.05	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05	<0.05	<0.05	0	<0.50[#1]	1.00	**67**	<0.50[#1]	<2.50[#1]	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.50[#1]	<0.50[#1]	0	<0.50[#1]	<2.50[#1]	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	0	<1.25[#1]	<1.25[#1]	0	<1.25[#1]	<6.25[#1]	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	0	<0.50[#1]	<0.50[#1]	0	<0.50[#1]	<2.50[#1]	0	<0.02	<0.02	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<1.25[#1]	<1.25[#1]	0	<1.25[#1]	<6.25[#1]	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	0	<1.25[#1]	<1.25[#1]	0	<1.25[#1]	<6.25[#1]	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	0	<0.50[#1]	<0.50[#1]	0	<0.50[#1]	<2.50[#1]	0	<0.02	<0.02	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<1.25[#1]	<1.25[#1]	0	<1.25[#1]	<6.25[#1]	0	<0.05	<0.05	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	0	40.6	42.3	4	40.6	58.8	**37**	0.17	0.17	0
Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	0	21.2	21.4	1	21.2	24.2	13	<0.1	<0.1	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	0	<0.50[#1]	<0.50[#1]	0	<0.50[#1]	<2.50[#1]	0	<0.02	<0.02	0
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	0	<0.50[#1]	<0.50[#1]	0	<0.50[#1]	<2.50[#1]	0	<0.02	<0.02	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	0	<0.50[#1]	<0.50[#1]	0	<0.50[#1]	<2.50[#1]	0	<0.02	<0.02	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	0	20.3	20.4	0	20.3	36.0	**56**	0.09	0.09	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	0	16.2	16.1	1	16.2	19.5	18	0.04	0.04	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02	0	81.8	88.8	8	81.8	133	**48**	0.28	0.30	7
Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	0	3.00	3.12	4	3.00	3.00	0	<0.02	<0.02	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	0	<0.50[#1]	<0.50[#1]	0	<0.50[#1]	<2.50[#1]	0	<0.02	<0.02	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	0	27.6	28.3	3	27.6	40.5	**38**	0.20	0.20	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	0	21.0	19.8	6	21.0	36.0	**53**	0.07	0.07	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	0	<1.25[#1]	<1.25[#1]	0	<1.25[#1]	<6.25[#1]	0	<0.05	<0.05	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	0	<0.50[#1]	<0.50[#1]	0	<0.50[#1]	<2.50[#1]	0	<0.02	<0.02	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	0	<0.50[#1]	<0.50[#1]	0	<0.50[#1]	<2.50[#1]	0	<0.02	<0.02	0
Sum of PFAS	µg/L	0.01	0.17	0.16	6	8,460	8,240	3	8,460	1,800	**130**	5.26	5.15	2
Sum of PFHxS and PFOS	µg/L	0.01	0.17	0.16	6	8,170	7,940	3	8,170	1,400	**141**	4.23	4.11	3
Perfluorononane sulfonate (PFNS)	mg/L	0.00002	<0.00002	<0.00002	0	-	-	-	-	-	-	-	-	-
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.09	0.09	0	8,020	7,780	3	8,020	1,160	**149**	2.93	2.80	5
Perfluoropropanesulfonic acid (PFPrS)	µg/L	0.02	<0.02	<0.02	0	-	-	-	-	-	-	-	-	-
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	0	28.8	30.7	6	28.8	42.8	**39**	0.11	0.10	10
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.08	0.07	13	154	164	6	154	244	**45**	1.30	1.31	1

*RPDs have only been considered where a concentration is greater than 1 times the LOR.
**Elevated RPDs are highlighted as per QAQC Profile settings
(Acceptable RPDs for LOR multiplier range are:
30 (1 - 10 x LOR); 30 (10 - 30 x LOR); 30 (> 30 x LOR))
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.
Any methods in the row header relate to those used in the primary laboratory

Data Validation Report
Field RPDs - Water
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Relative Percentage Differences

		Date	18 Oct 2024	19 Oct 2024		19 Oct 2024			19 Oct 2024			21 Oct 2024		
		Field ID	0990_MW110_241018	0990_QC201_20241018		0990_MW802S_241019	0990_QC102_241019		0990_MW802S_241019	0990_QC202_20241019		0990_MW135_241021	0990_QC103_241021	
		Matrix Type	Water	Water		Water	Water		Water	Water		Water	Water	
		Sample Type	Primary	Inter-lab Duplicate		Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate		Primary	Intra-lab Duplicate	Primary
		Lab Report Number	ES2435779	EB2438426	RPD	ES2435779	ES2435779	RPD	ES2435779	EB2438426	RPD	ES2435779	ES2435779	RPD
Analyte	**Unit**	**LOR**												
PFAS Full Suite														
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	0.17	0.14	19	2.13	1.68	24	2.13	1.65	25	0.02	0.02	0
Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	0	0.8	0.6	29	0.8	0.5	**46**	<0.1	<0.1	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	0.09	0.08	12	0.25	0.19	27	0.25	0.20	22	<0.02	<0.02	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	0.04	0.04	0	0.32	0.24	29	0.32	0.21	**42**	<0.02	<0.02	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.02	0.28	0.28	0	2.40	1.88	24	2.40	1.82	27	0.04	0.05	22
Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	0.20	0.14	**35**	2.45	2.07	17	2.45	1.66	**38**	<0.02	<0.02	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	0.07	0.03	**80**	0.68	0.55	21	0.68	0.52	27	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Sum of PFAS	µg/L	0.01	5.26	4.42	17	19.0	14.7	26	19.0	14.4	28	0.27	0.37	**31**
Sum of PFHxS and PFOS	µg/L	0.01	4.23	3.63	15	8.91	6.62	29	8.91	7.57	16	0.20	0.28	**33**
Perfluorononane sulfonate (PFNS)	mg/L	0.00002	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	2.93	2.54	14	2.61	2.16	19	2.61	1.93	30	0.12	0.19	**45**
Perfluoropropanesulfonic acid (PFPrS)	µg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0.11	0.08	**32**	0.34	0.28	19	0.34	0.27	23	0.01	0.02	**67**
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	1.30	1.09	18	6.30	4.46	**34**	6.30	5.64	11	0.08	0.09	12

***RPDs have only been considered where a concentration is greater than 1 times the LOR.**
****Elevated RPDs are highlighted as per QAQC Profile settings**
(Acceptable RPDs for LOR multiplier range are:
30 (1 - 10 x LOR); 30 (10 - 30 x LOR); 30 (> 30 x LOR))
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.**
Any methods in the row header relate to those used in the primary laboratory

Data Validation Report
Field RPDs - Water
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Relative Percentage Differences

		Date	21 Oct 2024			30 Oct 2024			01 Nov 2024	04 Nov 2024		01 Nov 2024	04 Nov 2024	
		Field ID	0990_MW135_241021	0990_QC203_20241021		0990_POT111_241030	0990_QC100_241030		0990_SW161_221101	0990_QC101_241101		0990_SW161_221101	0990_QC201_241101	
		Matrix Type	Water	Water		Water	Water		Water	Water		Water	Water	
		Sample Type	Primary	Inter-lab Duplicate		Primary	Intra-lab Duplicate		Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate	
		Lab Report Number	ES2435779	EB2438426	RPD	ES2435724	ES2435725	RPD	ES2435723	ES2435723	RPD	ES2435723	EB2438417	RPD
Analyte	Unit	LOR												
PFAS Full Suite														
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.02	0.04	0.06	40	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Sum of PFAS	µg/L	0.01	0.27	0.37	31	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Sum of PFHxS and PFOS	µg/L	0.01	0.20	0.29	37	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorononane sulfonate (PFNS)	mg/L	0.00002	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01	0.12	0.19	45	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluoropropanesulfonic acid (PFPrS)	µg/L	0.02	-	-	-	-	-	-	-	-	-	-	-	-
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	0.01	0.02	67	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01	0.08	0.10	22	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0

*RPDs have only been considered where a concentration is greater than 1 times the LOR.
**Elevated RPDs are highlighted as per QAQC Profile settings
(Acceptable RPDs for LOR multiplier range are:
30 (1 - 10 x LOR); 30 (10 - 30 x LOR); 30 (> 30 x LOR))
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.
Any methods in the row header relate to those used in the primary laboratory

AECOM

DATA VALIDATION REPORT; WATER & BIOTA

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801	**Date:**	16/12/2024
Site:	0990 – RAAF Tindal		
Matrix:	Water & Biota	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney; NMI Sydney	**Date:**	17/12/2024
Lab reference:	ES2434947; RN1449010		

Key Findings:

The analytical data can be used as a basis for interpretation, subject to the limitations outlined below:

- The elevated RPD suggests that concentrations of PFOS in the primary laboratory batch, ES2434947, may biased high by up to 78%. This is to be taken into consideration when assessing samples that report PFOS concentrations close to the selected criteria.

Component		Outliers			Material impact on interpretation
		No	Yes	Comment	
Frequency of field quality assurance/quality control		✓			No
Number of tests requested/reported		✓			No
Sample handling/preservation/holding times		✓			No
Frequency of laboratory QA/QC		✓			No
Limits of reporting (LOR)		✓			No
Blank analysis	Field blank	✓			No
	Rinsate blank	✓			No
	Trip blank	✓			No
	Method blank	✓			No
Field intra-laboratory relative percent differences (RPDs)		✓			No
Field inter-laboratory RPDs			✓	1	No
Laboratory duplicate RPDs		✓			No
Matrix spike (MS) % recoveries			✓	2	No
Laboratory control spike (LCS) % recoveries			✓	3	No
Surrogate % recoveries		✓			No
Other comments		✓			No

Comments

1. Field inter-laboratory RPDs

Field inter-laboratory RPDs were reported within control limits, with the exception of the following biota samples (higher concentration in **bold**):

- **0990_BIOAFA500_241015** & 0990_QC209_241016 for Perfluorooctane sulfonate (PFOS) (78%)

The elevated RPD suggests that concentrations of PFOS in the primary laboratory batch, ES2434947, may be biased high by up to 78%. However, elevated RPDs are expected between different laboratory methods and in biota due to the heterogeneous distribution of PFAS in the matrix type. As a conservative approach, the higher concentrations have been used for assessment against criteria.

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DATA VALIDATION REPORT; WATER & BIOTA

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801	**Date:**	16/12/2024
Site:	0990 – RAAF Tindal		
Matrix:	Water & Biota	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney; NMI Sydney	**Date:**	17/12/2024
Lab reference:	ES2434947; RN1449010		

2. Matrix spike (MS) % recoveries

Matrix spike recoveries (where reported) were within control limits, with the following exceptions for the primary biota batch ES2434947;

Sample ID	Analyte	Recovery (%)	Range (%)	Comment
0990_BIOAFA517_241016	Perfluoropropane sulfonic acid (PFPrS)	8.2%	70.0-130%	Recovery less than lower data quality objective
0990_BIOAFA517_241016	Perfluorobutane sulfonic acid (PFBS)	51.1%	72.0-128%	Recovery less than lower data quality objective
0990_BIOAFA517_241016	Perfluorooctane sulfonic acid (PFOS)	Not determined	-	MS recovery not determined, background level greater than or equal to 4x spike level.
0990_BIOAFA517_241016	Perfluoropentanoic acid (PFPeA)	58.(%	69.0-132%	Recovery less than lower data quality objective
0990_BIOAFA517_241016	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	83.2%	84.7-135%	Recovery less than lower data quality objective
0990_BIOAFA502_241016	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	80.6%	93.4-130%	Recovery less than lower data quality objective

Matrix spike recoveries were not determined for PFOS in primary batch ES2434947 for biota samples as background levels were greater than or equal to 4x spike levels. These non-determinations do not reflect method bias and do not affect data interpretation. The accuracy of the data can be assessed as acceptable based on method blanks and surrogate spike recoveries (which were reported at the required frequencies and within control limits, and available matrix spike recoveries for the same analytical method group (which were reported generally within control limits).

The potential exists for concentrations of PFPrS, PFBS, PFPeA, MeFOSE and 10:2 FTS to be bias low for biota samples in this batch. As there are no adopted guideline values for these PFAS compounds, the potential for under reporting is not expected to affect interpretation of the results against selected guidelines. However, this potential for under reporting should be taken into consideration when using the biota concentrations of these analytes quantitatively.

DATA VALIDATION REPORT; WATER & BIOTA

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801	**Date:**	16/12/2024
Site:	0990 – RAAF Tindal		
Matrix:	Water & Biota	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney; NMI Sydney	**Date:**	17/12/2024
Lab reference:	ES2434947; RN1449010		

3.Laboratory Control Spike (LCS) % recoveries

The following LCS recoveries were outside control limits within primary biota samples in batch ES2434947 and may affect data interpretation:

Analyte	Recovery (%)	Limits (%)	Comment
N-Methyl perfluorooctane sulfonamide (MeFOSA)	109%	88.1-105%	Recovery greater than upper control limit
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	80.5%	81.6-144%	Recovery less than lower control limit
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	81.6%	93.4-130%	Recovery less than lower control limit
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	92.5%	93.4-130%	Recovery less than lower control limit

The LCS recovery for MeFOSA was greater than the upper control limit, therefore the potential exists for concentrations of MeFOSA to be over reported. As there is no adopted guideline value for MeFOSA, the potential for over reporting is not expected to affect interpretation of the results against guidelines. However, this potential for over reporting should be taken into consideration when using the data quantitatively.

The LCS recovery for EtFOSA and 10:2 FTA was less than the lower control limit, therefore the potential exists for concentrations of these analytes to be under reported. As there is no adopted guideline value for these concentrations, the potential for over reporting is not expected to affect interpretation of the results against guidelines. However, this potential for over reporting should be taken into consideration when using the data quantitatively.

QA/QC Blanks

Data Validation Report
QA/QC Blanks
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Tindal

					Per- and Poly-fluoroalkyl Substances																													
					Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonate (PFOS)	Perfluorohexane sulfonate (PFHxS)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorononanesulfonic acid (PFNS)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.01	0.01	0.01	0.05	0.05	0.05	0.05	0.02	0.02	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.1	0.05	0.05	0.05	0.05	0.02	0.02	0.02
Field ID	**Date**	**Matrix Type**	**Sample Type**	**Lab Report Number**																														
0990_QC308_241017	**17 Oct 2024**	**WATER**	**Rinsate**	**ES2434947**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC309_241017	**17 Oct 2024**	**WATER**	**Rinsate**	**ES2434947**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC401_241015	**15 Oct 2024**	**WATER**	**Field Blank**	**ES2434947**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC402_241016	**16 Oct 2024**	**WATER**	**Field Blank**	**ES2434947**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC507_241017	**17 Oct 2024**	**WATER**	**Trip Blank**	**ES2434947**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
0990_QC508_241017	**17 Oct 2024**	**WATER**	**Trip Blank**	**ES2434947**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02

Data Validation Report
Field RPDs - Biota
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Relative Percentage Difference

		Date	15 Oct 2024			15 Oct 2024			15 Oct 2024			15 Oct 2024	
		Field	0990_BIOAFA485_241015	0990_QC157_241015		0990_BIOAFA485_241015	0990_QC207_241015		0990_BIOAFA486_241015	0990_QC158_241015		0990_BIOAFA486_241015	0990_QC208_241015
		Matrix Type	Biota_S	Biota_S		Biota_S	Biota_S		Biota_S	Biota_S		Biota_S	Biota_S
		Sample Type	Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate		Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate
		Lab Report Number	ES2434947	ES2434947	RPD	ES2434947	RN1449010	RPD	ES2434947	ES2434947	RPD	ES2434947	RN1449010
Analyte	**Unit**	**LOR**											
Biota													
Sample Description	--		1[#1]	1[#1]	0	1[#1]	-	-	1[#1]	1[#1]	0	1[#1]	-
Weight of Sample Prepared	g	0.1	136	109	22	136	-	-	69.4	51.8	29	69.4	-
PFAS Full Suite													
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.00005	<0.002	<0.002	0	<0.002	<0.00005[#2]	0	<0.002	<0.002	0	<0.002	<0.00005[#2]
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.00005	<0.002	<0.002	0	<0.002	<0.00005[#1]	0	<0.002	<0.002	0	<0.002	<0.00005[#1]
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.00005	<0.002	<0.002	0	<0.002	<0.00005[#1]	0	<0.002	<0.002	0	<0.002	<0.00005[#1]
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.00005	<0.002	<0.002	0	<0.002	<0.00005[#1]	0	<0.002	<0.002	0	<0.002	<0.00005[#1]
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.002	<0.002	<0.002	0	<0.002	-	-	<0.002	<0.002	0	<0.002	-
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0001	<0.001	<0.001	0	<0.001	<0.0001[#1]	0	<0.001	<0.001	0	<0.001	<0.0001[#1]
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.002	<0.002	<0.002	0	<0.002	-	-	<0.002	<0.002	0	<0.002	-
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.005	<0.005	<0.005	0	<0.005	-	-	<0.005	<0.005	0	<0.005	-
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	mg/kg	0.0001	<0.001	<0.001	0	<0.001	<0.0001[#2]	0	<0.001	<0.001	0	<0.001	<0.0001[#2]
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.002	<0.002	<0.002	0	<0.002	-	-	<0.002	<0.002	0	<0.002	-
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.00005	<0.001	<0.001	0	<0.001	<0.00005[#1]	0	<0.001	<0.001	0	<0.001	<0.00005[#1]
Perfluorobutanoic acid (PFBA)	mg/kg	0.0001	<0.005	<0.005	0	<0.005	<0.0001[#1]	0	<0.005	<0.005	0	<0.005	<0.0001[#1]
Perfluorodecanesulfonic acid (PFDS)	mg/kg	0.0001	<0.002	<0.002	0	<0.002	<0.0001[#2]	0	<0.002	<0.002	0	<0.002	<0.0001[#2]
Perfluorodecanoic acid (PFDA)	mg/kg	0.00005	<0.001	<0.001	0	<0.001	<0.00005[#1]	0	<0.001	<0.001	0	<0.001	<0.00005[#1]
Perfluorododecanoic acid (PFDoDA)	mg/kg	0.00005	<0.002	<0.002	0	<0.002	<0.00005[#2]	0	<0.002	<0.002	0	<0.002	<0.00005[#2]
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0001	<0.001	<0.001	0	<0.001	<0.0001[#2]	0	<0.001	<0.001	0	<0.001	<0.0001[#2]
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.00005	<0.001	<0.001	0	<0.001	<0.00005[#2]	0	<0.001	<0.001	0	<0.001	<0.00005[#2]
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0001	<0.001	<0.001	0	<0.001	<0.0001[#2]	0	<0.001	<0.001	0	<0.001	<0.0001[#2]
Perfluorononanoic acid (PFNA)	mg/kg	0.00005	<0.001	<0.001	0	<0.001	<0.00005[#2]	0	<0.001	<0.001	0	<0.001	<0.00005[#2]
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0001	<0.005	<0.005	0	<0.005	<0.0001[#2]	0	<0.005	<0.005	0	<0.005	<0.0001[#2]
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.00005	<0.001	<0.001	0	<0.001	<0.00005[#2]	0	<0.001	<0.001	0	<0.001	<0.00005[#2]
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0001	<0.002	<0.002	0	<0.002	<0.0001[#2]	0	<0.002	<0.002	0	<0.002	<0.0001[#2]
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0001	<0.002	<0.002	0	<0.002	<0.0001[#2]	0	<0.002	<0.002	0	<0.002	<0.0001[#2]
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.00005	<0.002	<0.002	0	<0.002	<0.00005[#2]	0	<0.002	<0.002	0	<0.002	<0.00005[#2]
Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.00005	<0.001	<0.001	0	<0.001	<0.00005[#2]	0	<0.001	<0.001	0	<0.001	<0.00005[#2]
Perfluorononane sulfonate (PFNS)	mg/kg	0.0001	<0.001	<0.001	0	<0.001	<0.0001[#2]	0	<0.001	<0.001	0	<0.001	<0.0001[#2]
Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0001	0.015	0.012	22	0.015	0.014[#2]	7	0.011	0.012	9	0.011	0.012[#2]
Perfluoropropanesulfonic acid (PFPrS)	µg/kg	2	<2	<2	0	<2	-	-	<2	<2	0	<2	-
Perfluorooctanoic Acid (PFOA)	mg/kg	0.00005	<0.001	<0.001	0	<0.001	<0.00005[#2]	0	<0.001	<0.001	0	<0.001	<0.00005[#2]
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0001	<0.001	<0.001	0	<0.001	<0.0001[#2]	0	<0.001	<0.001	0	<0.001	<0.0001[#2]

***RPDs have only been considered where a concentration is greater than 1 times the LOR.**

****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for LOR multiplier ranges are:**

30 (1 - 10 x LOR); 30 (10 - 30 x LOR); 30 (> 30 x LOR))

*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.**

Any methods in the row header relate to those used in the primary laboratory

Data Validation Report
Field RPDs - Biota
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Relative Percentage Difference

		Date		15 Oct 2024			15 Oct 2024			15 Oct 2024	16 Oct 2024		16 Oct 2024		
		Field ID		0990_BIOAFA487_241015	0990_QC159_241015		0990_BIOAFA488_241015	0990_QC160_241015		0990_BIOAFA500_241015	0990_QC209_241016		0990_BIOAFA501_241016	0990_QC210_241016	
		Matrix Type		Biota_S	Biota_S		Biota_S	Biota_S		Biota_S	Biota_S		Biota_S	Biota_S	
		Sample Type		Primary	Intra-lab Duplicate		Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate		Primary	Inter-lab Duplicate	
		Lab Report	RPD	ES2434947	ES2434947	RPD	ES2434947	ES2434947	RPD	ES2434947	RN1449010	RPD	ES2434947	RN1449010	RPD
Analyte	Unit	LOR													
Biota															
Sample Description	--		-	1[a]	1[a]	0	1[a]	1[a]	0	1[a]	-	-	1[a]	-	-
Weight of Sample Prepared	g	0.1	-	73.6	77.3	5	59.8	52.7	13	11.1	-	-	144	-	-
PFAS Full Suite															
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	mg/kg	0.00005	0	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.00005[a]	0	<0.002	<0.00005[a]	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	mg/kg	0.00005	0	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.00005[a]	0	<0.002	<0.00005[a]	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.00005	0	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.00005[a]	0	<0.002	<0.00005[a]	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	mg/kg	0.00005	0	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.00005[a]	0	<0.002	<0.00005[a]	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	mg/kg	0.002	-	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	-	-	<0.002	-	-
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	mg/kg	0.0001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.0001[a]	0	<0.001	<0.0001[a]	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	mg/kg	0.002	-	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	-	-	<0.002	-	-
N-Methyl perfluorooctane sulfonamide (MeFOSA)	mg/kg	0.005	-	<0.005	<0.005	0	<0.005	<0.005	0	<0.005	-	-	<0.005	-	-
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	mg/kg	0.0001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.0001[a]	0	<0.001	<0.0001[a]	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	mg/kg	0.002	-	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	-	-	<0.002	-	-
Perfluorobutane sulfonic acid (PFBS)	mg/kg	0.00005	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.00005[a]	0	<0.001	<0.00005[a]	0
Perfluorobutanoic acid (PFBA)	mg/kg	0.0001	0	<0.005	<0.005	0	<0.005	<0.005	0	<0.005	<0.0001[a]	0	<0.005	<0.0001[a]	0
Perfluorodecanesulfonic acid (PFDS)	mg/kg	0.0001	0	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.0001[a]	0	<0.002	<0.0001[a]	0
Perfluorodecanoic acid (PFDA)	mg/kg	0.00005	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.00005[a]	0	<0.001	<0.00005[a]	0
Perfluorododecanoic acid (PFDoDA)	mg/kg	0.00005	0	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.00005[a]	0	<0.002	<0.00005[a]	0
Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.0001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.0001[a]	0	<0.001	0.00012[a]	0
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.00005	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.00005[a]	0	<0.001	<0.00005[a]	0
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.0001[a]	0	<0.001	<0.0001[a]	0
Perfluorononanoic acid (PFNA)	mg/kg	0.00005	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.00005[a]	0	<0.001	<0.00005[a]	0
Perfluorooctane sulfonamide (FOSA)	mg/kg	0.0001	0	<0.005	<0.005	0	<0.005	<0.005	0	<0.005	<0.0001[a]	0	<0.005	<0.0001[a]	0
Perfluoropentane sulfonic acid (PFPeS)	mg/kg	0.00005	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.00005[a]	0	<0.001	<0.00005[a]	0
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0001	0	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.0001[a]	0	<0.002	<0.0001[a]	0
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0001	0	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.0001[a]	0	<0.002	<0.0001[a]	0
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.00005	0	<0.002	<0.002	0	<0.002	<0.002	0	<0.002	<0.00005[a]	0	<0.002	<0.00005[a]	0
Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.00005	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.00005[a]	0	<0.001	<0.00005[a]	0
Perfluorononane sulfonate (PFNS)	mg/kg	0.0001	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.0001[a]	0	<0.001	<0.0001[a]	0
Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.0001	9	0.024	0.024	0	0.032	0.03	6	0.041	0.018[a]	78	0.013	0.014[a]	7
Perfluoropropanesulfonic acid (PFPrS)	µg/kg	2	-	<2	<2	0	<2	<2	0	<2	-	-	<2	-	-
Perfluorooctanoic Acid (PFOA)	mg/kg	0.00005	0	<0.001	<0.001	0	<0.001	<0.001	0	<0.001	<0.00005[a]	0	<0.001	<0.00005[a]	0
Perfluorohexane sulfonic acid (PFHxS)	mg/kg	0.0001	0	<0.001	<0.001	0	<0.001	<0.001	0	0.001	<0.0001[a]	164	<0.001	<0.0001[a]	0

*RPDs have only been considered where a concentration is greater than 1 times the LOR.

**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for LOR multiplier ranges are

30 (1 - 10 x LOR); 30 (10 - 30 x LOR); 30 (> 30 x LOR))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.

Any methods in the row header relate to those used in the primary laboratory

DRAFT

Appendix E

Chain of Custody

CHAIN OF CUSTODY

COC#: 73693 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] 22/10/24 1130

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: OTH118

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_OTH118_241016		16/10/2024 05:32 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2433837

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 73699 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 22/10/24

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT121

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT121_241016		16/10/2024 11:10 AM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney
Work Order Reference
ES2433838

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 73700 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] 22/10/24 1130

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT124

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT124_241017		17/10/2024 08:52 AM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2433839

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 73701 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] 22/10/24 1130

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT125

ORDER NO: 60676801/

PROJECT MANAGER [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT125_241016		16/10/2024 05:45 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2433840

Telephone : +61-2-8784 8555

CHAIN OF CUSTODY

COC#: 73707 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] 22/10/24 1130

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT130

ORDER NO: 60676801/

PROJECT MANAGER [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT130_241016		16/10/2024 09:00 AM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2433842

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 73709 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 22/10/24 1130

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT196

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT196_241016		16/10/2024 10:45 AM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2433843

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 73793 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] 22/10/24 1130

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT127

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE: / ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT127_241016		16/10/2024 05:40 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2433841

Telephone : - 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 74294 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] 22/10/24 1130

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT239

ORDER NO: 60676801/

PROJECT MANAGER [redacted]

PRIMARY SAMPLER

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		C	

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT239_241015		15/10/2024 09:00 AM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2433845

Telephone : +61-2-8784 8555

CHAIN OF CUSTODY

COC#: 73692 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] 22/10/24 1130

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: OTH117

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE: / ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_OTH117_241015		15/10/2024 06:48 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2433846

Telephone : +61-2-8784 8555

CHAIN OF CUSTODY

COC#: 73710 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	[redacted]
DATE TIME:	DATE TIME:	DATE TIME:	22/10/24 1130

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT201

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT201_241016		16/10/2024 10:30 AM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2433844

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 73713 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] 22/10/24 1130

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: October 24 PP QC's

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE: / ES2024AECOMAU0010

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_QC100_241015		17/10/2024 10:11 AM	WATER	ALS: 2 Non ALS: 0	No	X		
002	0990_QC101_241016		16/10/2024 10:12 AM	WATER	ALS: 2 Non ALS: 0	No	X		
~~003~~	0990_QC200_241015	Please send to ALS Brisbane	15/10/2024 10:11 AM	WATER	ALS: 2 Non ALS: 0	No	X		
~~004~~	0990_QC201_241016	Please send to ALS Brisbane	16/10/2024 10:13 AM	WATER	ALS: 2 Non ALS: 0	No	X		
005	0990_QC300_241015		15/10/2024 06:57 PM	WATER	ALS: 2 Non ALS: 0	No	X		
006	0990_QC301_241016		16/10/2024 09:15 AM	WATER	ALS: 2 Non ALS: 0	No	X		
007	0990_QC302_241017		17/10/2024 08:58 AM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division
Sydney
Work Order Reference
ES2433855

Telephone : - 61-2-8784 8555

Forward Lab / Split WO
Tests / Analysis: ~~Forms~~ ALS Brisbane
Organised By / Date:
Relinquished By / Date:
Courier / Courier: QC FWD
PO No: ES2433855
Search By PO / Internal Sheet:

CHAIN OF CUSTODY

COC#: 73705 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] 22/10/24 1130

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT129

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT129_241015		15/10/2024 02:10 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2433850

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 73708 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 22/10/24 1130

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT131

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT131_241015		15/10/2024 05:34 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2433851

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 73695 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] 22/10/24 1130

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT112

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT112_241015		15/10/2024 12:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2433854

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 73702 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] 22/10/24 1130

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT126

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT126_241015		15/10/2024 05:21 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2433847

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 73704 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] 22/10/24 1130

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT128

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE: / ES2024AECOMAU0010

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT128_241015		15/10/2024 12:50 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney
Work Order Reference
ES2433848

Telephone : +61-2-8784 8555

CHAIN OF CUSTODY

COC#: 73696 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] 22/10/24 1130

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT113

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT113_241015		15/10/2024 12:39 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2433852

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 73694 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] 22/10/24 1120

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: OTH119

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_OTH119_241015		15/10/2024 02:33 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2433853

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 73698 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY: [redacted]
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 5/11/24 12:00

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT120

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT120_241030		30/10/2024 03:40 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney
Work Order Reference
ES2435722

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 73698 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT120

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_POT120_241030	HDPE (no PTFE)	20 mL	00352309079915	Grey	No	
001	0990_POT120_241030	HDPE (no PTFE)	20 mL	00352309080044	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

ALSCompass SAMPLING Intelligence

ALS

Esky 2@4

ALS Use Only

Custody Document for Submissions via ALS Compass App

Project: 60676801 Client: DoD Project Manager: [redacted]

Phone:

ALS Compass COC Reference: 73698 # Samples: 1 Sampler:

Phone:

Turnaround Requirements: Standard X Urgent

Special Instructions:	ALS Use Only			
	Custody seal intact?	YES	NO	N/A
	Free ice / frozen ice bricks upon receipt?	YES	NO	N/A
	Random sample temperature on receipt?	2-7 °C		

Custody:

[redacted]	Received by: [redacted]	Relinquished by:	Received by: [redacted]
Date / Time: 4.11	Date / Time: 1130 04 NOV 2024	Date / Time:	Date / Time: 5/11/24 12:20

LC-146

CHAIN OF CUSTODY

COC#: 73697 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	[redacted]
DATE TIME:	DATE TIME:	DATE TIME:	5/11/24 12:30

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT114

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT114_241030		30/10/2024 12:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2435721

Telephone : +61-2-8784 8555

CHAIN OF CUSTODY

COC#: 73697 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT114

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_POT114_241030	HDPE (no PTFE)	20 mL	00352309080004	Grey	No	
001	0990_POT114_241030	HDPE (no PTFE)	20 mL	00352309080107	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

ALSCompass SAMPLING Intelligence (ALS)

Esky 2&4

ALS Use Only

Custody Document for Submissions via ALS Compass App

Project: 60676801 Client: DoD Project Manager: [redacted]

Phone: ([redacted]

ALS Compass COC Reference: 73697 # Samples: 1 Sampler: [redacted]

Phone: ([redacted]

Turnaround Requirements: Standard X Urgent

Special Instructions:	ALS Use Only			
	Custody seal intact?	YES	NO	N/A
	Free ice / frozen ice bricks upon receipt?	YES	NO	N/A
	Random sample temperature on receipt?	9.3	°C	

Custody:

Relinquished by:	Received by:	Relinquished by:	Received by:
[redacted]	[redacted]		[redacted]
Date / Time: 4.11	Date / Time: 04 NOV 2024 1130	Date / Time:	Date / Time: 5/11/24 12:30

LC-146

CHAIN OF CUSTODY

COC#: 74969 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY: [redacted]
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 5/11/24 12:30

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: QC PP October

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_QC100_241030		04/11/2024 12:26 PM	WATER	ALS: 2 Non ALS: 0	No	X		
002	0990_QC200_241030	send to als brisbane	04/11/2024 12:28 PM	WATER	ALS: 2 Non ALS: 0	No	X		
003	0990_QC300_241030		30/10/2024 04:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		
004	0990_QC400_241030		30/10/2024 04:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney
Work Order Reference
ES2435725

Telephone : + 61-2-8784 8555

[redacted]

Relinquished By / Date: 5/11/24
Received By / Date:
Condition / Condition:
WO No: ES2435725
Attach By WO / Transport Sheet

CHAIN OF CUSTODY

COC#: 74969 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: QC PP October

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU0010

EMAIL REPORTS TO: [redacted]

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_QC100_241030	HDPE (no PTFE)	20 mL	00352309080023	Grey	No	
001	0990_QC100_241030	HDPE (no PTFE)	20 mL	00352309080026	Grey	No	
002	0990_QC200_241030	HDPE (no PTFE)	20 mL	00352312045800	Grey	No	
002	0990_QC200_241030	HDPE (no PTFE)	20 mL	00352309080018	Grey	No	
003	0990_QC300_241030	HDPE (no PTFE)	20 mL	00352312045821	Grey	No	
003	0990_QC300_241030	HDPE (no PTFE)	20 mL	00352312046017	Grey	No	
004	0990_QC400_241030	HDPE (no PTFE)	20 mL	00352312046315	Grey	No	
004	0990_QC400_241030	HDPE (no PTFE)	20 mL	00352312046190	Grey	No	

Total Bottle Count: ALS: 8, Non ALS: 0

CHAIN OF CUSTODY

COC#: 74961 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	[redacted]
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 5/11/24 12:30

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT111

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT111_241030		30/10/2024 12:30 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2435724

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 74961 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT111

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: / ES2024AECOMAU0010

EMAIL REPORTS TO: [redacted]

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_POT111_241030	HDPE (no PTFE)	20 mL	00352312045771	Grey	No	
001	0990_POT111_241030	HDPE (no PTFE)	20 mL	00352309079926	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

ALSCompass SAMPLING Intelligence (ALS)

ESKY 2&4

ALS Use Only

Custody Document for Submissions via ALS Compass App

Project: 60676801 Client: DoD Project Manager: [redacted]

Phone: ([redacted]

ALS Compass COC Reference: 74961 # Samples: 1 Sampler: [redacted]

Phone: ([redacted]

Turnaround Requirements: Standard X Urgent

Special Instructions:	ALS Use Only			
	Custody seal intact?	YES	NO	N/A
	Free ice / frozen ice bricks upon receipt?	YES	NO	N/A
	Random sample temperature on receipt?	10.7 °C		

Custody:

Relinquished by:	Received by:	Relinquished by:	Received by:
[redacted]	[redacted]		[redacted]
Date / Time: 4.11	Date / Time: 04 NOV 2024 11 30	Date / Time:	Date / Time: 5/11/24 12:30

LC-146

CHAIN OF CUSTODY

COC#: 74969 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY: [redacted]
DATE TIME:	DATE TIME:	DATE TIME:	5/11/24 12:30

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: QC PP October

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

PROJECT MANAGER [redacted]
PRIMARY SAMPLER: [redacted]

CONTACT PH:
QUOTE NO:

SAMPLER MOBILE:
/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_QC100_241030		04/11/2024 12:26 PM	WATER	ALS: 2 Non ALS: 0	No	X		
002	0990_QC200_241030	send to als brisbane	04/11/2024 12:28 PM	WATER	ALS: 2 Non ALS: 0	No	X		
003	0990_QC300_241030		30/10/2024 04:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		
004	0990_QC400_241030		30/10/2024 04:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney
Work Order Reference
ES2435725

Telephone : + 61-2-8784 8555

Received / Forwarded Lab / Split WO
Lab / Analysis: Perth
Received By / Date: Josh
Relinquished By / Date: 5/11/24
Comments / Condition:
WO No: ES2435725
Attach By WO / Transmit Sheet

CHAIN OF CUSTODY

COC#: 74969 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: QC PP October

ORDER NO: 60676801/

PROJECT MANAGER [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: / ES2024AECOMAU0010

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_QC100_241030	HDPE (no PTFE)	20 mL	00352309080023	Grey	No	
001	0990_QC100_241030	HDPE (no PTFE)	20 mL	00352309080026	Grey	No	
002	0990_QC200_241030	HDPE (no PTFE)	20 mL	00352312045800	Grey	No	
002	0990_QC200_241030	HDPE (no PTFE)	20 mL	00352309080018	Grey	No	
003	0990_QC300_241030	HDPE (no PTFE)	20 mL	00352312045821	Grey	No	
003	0990_QC300_241030	HDPE (no PTFE)	20 mL	00352312046017	Grey	No	
004	0990_QC400_241030	HDPE (no PTFE)	20 mL	00352312046315	Grey	No	
004	0990_QC400_241030	HDPE (no PTFE)	20 mL	00352312046190	Grey	No	

Total Bottle Count: ALS: 8, Non ALS: 0

CHAIN OF CUSTODY

COC#: 74974 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY: [redacted]
DATE TIME:	DATE TIME:	DATE TIME: 5/11/24 12:00

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: OTH114

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_OTH114_241030		30/10/2024 02:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney
Work Order Reference
ES2435728

Telephone : +61-2-8784 8555

CHAIN OF CUSTODY

COC#: 74974 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: OTH114

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU0010

EMAIL REPORTS TO: [redacted]

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_OTH114_241030	HDPE (no PTFE)	20 mL	00352312045800	Grey	No	
001	0990_OTH114_241030	HDPE (no PTFE)	20 mL	00352312046165	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

ALSCompass SAMPLING Intelligence

ALS

ESKY 2844

ALS Use Only

Custody Document for Submissions via ALS Compass App

Project: 60676801 Client: DoD Project Manager: [redacted]

Phone: ([redacted]

ALS Compass COC Reference: 77974 # Samples: 1 Sampler: [redacted]

Phone: ([redacted]

Turnaround Requirements: Standard X Urgent

Special Instructions:	ALS Use Only			
	Custody seal intact?	YES	NO	N/A
	Free ice / frozen ice bricks upon receipt?	YES	NO	N/A
	Random sample temperature on receipt?	2.1	°C	

Custody:

Relinquished by:	Received by:	Relinquished by:	Received by:
[redacted]	[redacted]		[redacted]
Date / Time: 4.11	Date / Time: 1130 04 NOV 2024	Date / Time:	Date / Time: 5/11/24 12:30

LC-146

CHAIN OF CUSTODY

COC#: 74975 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	[redacted]
DATE TIME:	DATE TIME:	DATE TIME:	5/11/24 12:30

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: oth115

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER [redacted]

PRIMARY SAMPLER

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_OTH115_241030		30/10/2024 02:50 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2435729

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 74975 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: oth115

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

PROJECT MANAGER [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO: / ES2024AECOMAU0010

SAMPLER MOBILE:

EMAIL REPORTS TO: [redacted]

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_OTH115_241030	HDPE (no PTFE)	20 mL	00352312046141	Grey	No	
001	0990_OTH115_241030	HDPE (no PTFE)	20 mL	00352312046142	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

ALSCompass SAMPLING Intelligence

ALS

Esky 2&4

ALS Use Only

Custody Document for Submissions via ALS Compass App

Project: 60676801 Client: DoD Project Manager: [redacted]

Phone: ([redacted]

ALS Compass COC Reference: 74975 # Samples: 1 Sampler: [redacted]

Phone: ([redacted]

Turnaround Requirements: Standard X Urgent

Special Instructions:	ALS Use Only			
	Custody seal intact?	YES	NO	N/A
	Free ice / frozen ice bricks upon receipt?	YES	NO	N/A
	Random sample temperature on receipt?	2.7°C		

Custody:

Relinquished by:	Received by:	Relinquished by:	Received by:
[redacted]	[redacted]		[redacted]
Date / Time: 4.11	Date / Time: 11 30 04 NOV 2024	Date / Time:	Date / Time: 5/11/24 12:30

LC-146

CHAIN OF CUSTODY

COC#: 74976 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY: [redacted]
DATE TIME:	DATE TIME:	DATE TIME:	5/11/24 12:30

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: OTH120

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_OTH120_241030		30/10/2024 01:30 PM	WATER	ALS: 2 Non ALS: 0	No.	X		

Environmental Division Sydney

Work Order Reference

ES2435730

Telephone : +61-2-8784 8555

CHAIN OF CUSTODY

COC#: 74976 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: OTH120

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_OTH120_241030	HDPE (no PTFE)	20 mL	00352312046067	Grey	No	
001	0990_OTH120_241030	HDPE (no PTFE)	20 mL	00352312046272	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

ALSCompass SAMPLING Intelligence

ALS

ESKY 2&4

ALS Use Only

Custody Document for Submissions via ALS Compass App

Project: 60676801 **Client:** DoD **Project Manager:** [redacted]

Phone: [redacted]

ALS Compass COC Reference: 74976 **# Samples:** * **Sampler:** [redacted]

Phone: [redacted]

Turnaround Requirements: Standard X Urgent

Special Instructions:	ALS Use Only			
	Custody seal intact?	YES	NO	N/A
	Free ice / frozen ice bricks upon receipt?	YES	NO	N/A
	Random sample temperature on receipt?	8.2	°C	

Custody:

Relinquished by:	Received by:	Relinquished by:	Received by:
[redacted]	[redacted]		[redacted]
Date / Time: 4.11	Date / Time: 1130 04 NOV 2024	Date / Time:	Date / Time: 5/11/24 12:30

LC-146

CHAIN OF CUSTODY

COC#: 73714 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY: [redacted]
DATE TIME:	DATE TIME.	DATE TIME:	5/11/24 12:30

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual GW October

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_MW285_241022		22/10/2024 02:10 PM	WATER	ALS: 2 Non ALS: 0	No	X		
002	0990_MW400_20241019		19/10/2024 04:30 PM	WATER	ALS: 2 Non ALS: 0	No	X		
003	0990_MW403_20241017		17/10/2024 06:40 PM	WATER	ALS: 2 Non ALS: 0	No	X		
004	0990_OTH111_20241018		18/10/2024 05:54 PM	WATER	ALS: 2 Non ALS: 0	No	X		
005	0990_OTH112_241023		23/10/2024 03:11 PM	WATER	ALS: 2 Non ALS: 0	No	X		
006	0990_MW118I_20241018		18/10/2024 04:25 PM	WATER	ALS: 2 Non ALS: 0	No	X		
007	0990_MW118D_20241018		18/10/2024 04:45 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2435779

Telephone : + 61-2-8784 8555

Submitted / Received Lab / Sydney

Lab / Analyses: Brisbane

Organised By / Date: Josh

Relinquished By / Date: 5/11/24

Courier / Courier:

WO Nos: ES2435779

Attach By WO / Submission

CHAIN OF CUSTODY

COC#: 73714 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual GW October

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

PROJECT MANAGER [redacted]
PRIMARY SAMPLER:

CONTACT PH:
QUOTE NO:

SAMPLER MOBILE:
/ ES2024AECOMAU0010

EMAIL REPORTS TO: [redacted]

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
008	0990_MW130_20241018		18/10/2024 03:45 PM	WATER	ALS: 2 Non ALS: 0	No	X		
009	0990_MW131_20241018		18/10/2024 05:25 PM	WATER	ALS: 2 Non ALS: 0	No	X		
010	0990_MW106_20241018		18/10/2024 10:25 AM	WATER	ALS: 2 Non ALS: 0	No	X		
011	0990_MW801S_20241018		18/10/2024 10:00 AM	WATER	ALS: 2 Non ALS: 0	No	X		
012	0990_MW109_20241018		18/10/2024 11:10 AM	WATER	ALS: 2 Non ALS: 0	No	X		
013	0990_MW109D_20241018		18/10/2024 11:40 AM	WATER	ALS: 2 Non ALS: 0	No	X		
014	0990_MW111S_20241018		18/10/2024 12:20 PM	WATER	ALS: 2 Non ALS: 0	No	X		

CHAIN OF CUSTODY

COC#: 73714 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual GW October

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
015	0990_MW111D_20241018		18/10/2024 12:40 PM	WATER	ALS: 2 Non ALS: 0	No	X		
016	0990_MW146_20241019		19/10/2024 11:30 AM	WATER	ALS: 2 Non ALS: 0	No	X		
017	0990_MW802S_20241019		19/10/2024 10:10 AM	WATER	ALS: 2 Non ALS: 0	No	X		
018	0990_MW802I_20241019		19/10/2024 10:50 AM	WATER	ALS: 2 Non ALS: 0	No	X		
019	0990_MW802D_20241019		19/10/2024 11:00 AM	WATER	ALS: 2 Non ALS: 0	No	X		
020	0990_MW149_202410		04/11/2024 12:36 PM	WATER	ALS: 0 Non ALS: 0	No	X		
021	0990_MW803S_20241017		17/10/2024 04:15 PM	WATER	ALS: 2 Non ALS: 0	No	X		

CHAIN OF CUSTODY

COC#: 73714 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual GW October

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
022	0990_MW803I_20241017		17/10/2024 04:15 PM	WATER	ALS: 2 Non ALS: 0	No	X		
023	0990_MW803D_20241017		17/10/2024 04:45 PM	WATER	ALS: 2 Non ALS: 0	No	X		
024	0990_MW136_20241020		20/10/2024 12:30 PM	WATER	ALS: 2 Non ALS: 0	No	X		
025	0990_MW107_20241018		18/10/2024 10:50 AM	WATER	ALS: 2 Non ALS: 0	No	X		
026	0990_MW104_20241017		17/10/2024 03:45 PM	WATER	ALS: 2 Non ALS: 0	No	X		
027	0990_MW110_20241018		18/10/2024 12:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		
028	0990_MW127_20241018		19/10/2024 12:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		

CHAIN OF CUSTODY

COC#: 73714 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual GW October

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
029	0990_MW129_20241019		19/10/2024 10:10 AM	WATER	ALS: 2 Non ALS: 0	No	X		
030	0990_MW135_20241021		21/10/2024 11:00 AM	WATER	ALS: 2 Non ALS: 0	No	X		
031	0990_MW137_20241020		20/10/2024 01:30 PM	WATER	ALS: 2 Non ALS: 0	No	X		
032	0990_MW140_241101		01/11/2024 05:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		
033	0990_MW142_20241019		19/10/2024 05:30 PM	WATER	ALS: 2 Non ALS: 0	No	X		
034	0990_MW144_20241019		19/10/2024 06:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		
035	0990_MW149_20241019		19/10/2024 09:50 AM	WATER	ALS: 2 Non ALS: 0	No	X		

CHAIN OF CUSTODY

COC#: 73714 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual GW October

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
036	0990_MW231_20241020		20/10/2024 03:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		
037	0990_MW244_20241021		21/10/2024 09:30 AM	WATER	ALS: 2 Non ALS: 0	No	X		
038	0990_MW278_20241022		22/10/2024 01:40 PM	WATER	ALS: 2 Non ALS: 0	No	X		
039	0990_QC100_20241017		17/10/2024 08:04 PM	WATER	ALS: 2 Non ALS: 0	No	X		
040	0990_QC101_20241018		19/10/2024 01:29 PM	WATER	ALS: 2 Non ALS: 0	No	X		
041	0990_QC102_20241019		19/10/2024 04:25 AM	WATER	ALS: 2 Non ALS: 0	No	X		
042	0990_QC103_20241021		21/10/2024 07:55 PM	WATER	ALS: 2 Non ALS: 0	No	X		

CHAIN OF CUSTODY

COC#: 73714 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual GW October

ORDER NO: 60676801/

PROJECT MANAGER [redacted]

PRIMARY SAMPLER [redacted]

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: / ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
043	0990_QC203_20241021	Send to ALS Brisbane	21/10/2024 07:55 PM	WATER	ALS: 2 Non ALS: 0	No	X		
044	0990_QC200_20241017	Send to ALS Brisbane	17/10/2024 08:05 PM	WATER	ALS: 2 Non ALS: 0	No	X		
045	0990_QC201_20241018	Send to ALS Brisbane	19/10/2024 01:17 PM	WATER	ALS: 2 Non ALS: 0	No	X		
046	0990_QC202_20241019	Send to ALS Brisbane	19/10/2024 01:06 PM	WATER	ALS: 2 Non ALS: 0	No	X		
047	0990_QC300_20241017	rinsate	17/10/2024 08:07 PM	WATER	ALS: 2 Non ALS: 0	No	X		
048	0990_QC301_20241018	rinsate	19/10/2024 02:01 PM	WATER	ALS: 2 Non ALS: 0	No	X		
049	0990_QC302_20241019	rinsate	19/10/2024 01:59 PM	WATER	ALS: 2 Non ALS: 0	No	X		

CHAIN OF CUSTODY

COC#: 73714 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual GW October

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: / ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
050	0990_QC400_20241017	field blank	17/10/2024 08:07 PM	WATER	ALS: 2 Non ALS: 0	No	X		
051	0990_QC401_20241018	field blank	19/10/2024 01:59 PM	WATER	ALS: 2 Non ALS: 0	No	X		
052	0990_QC402_20241019	field blank	19/10/2024 02:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		
053	0990_QC500_241021	trip blank	21/10/2024 07:58 PM	WATER	ALS: 2 Non ALS: 0	No	X		
054	0990_QC303_241020		20/10/2024 12:15 PM	WATER	ALS: 2 Non ALS: 0	No	X		
055	0990_QC403_241020		20/10/2024 12:17 PM	WATER	ALS: 2 Non ALS: 0	No	X		
056	0990_QC304_241021		21/10/2024 10:24 AM	WATER	ALS: 2 Non ALS: 0	No	X		

CHAIN OF CUSTODY

COC#: 73714 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual GW October

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
057	0990_QC404_241021		21/10/2024 10:25 AM	WATER	ALS: 2 Non ALS: 0	No	X		
058	0990_QC305_241022		22/10/2024 04:42 PM	WATER	ALS: 2 Non ALS: 0	No	X		
059	0990_QC405_241022		22/10/2024 04:42 PM	WATER	ALS: 2 Non ALS: 0	No	X		
060	0990_QC406_241023		28/10/2024 03:05 PM	WATER	ALS: 2 Non ALS: 0	No	X		
061	0990_QC306_241023		28/10/2024 03:06 PM	WATER	ALS: 2 Non ALS: 0	No	X		
062	0990_MW133_241101		01/11/2024 10:00 AM	WATER	ALS: 2 Non ALS: 0	No	X		

CHAIN OF CUSTODY

COC#: 73714 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual GW October

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH: [redacted]

QUOTE NO: / ES2024AECOMAU0010

SAMPLER MOBILE: [redacted]

EMAIL REPORTS TO: [redacted]

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_MW285_241022	HDPE (no PTFE)	20 mL	00352309079825	Grey	No	
001	0990_MW285_241022	HDPE (no PTFE)	20 mL	00352309079844	Grey	No	
002	0990_MW400_20241019	HDPE (no PTFE)	20 mL	00352312045926	Grey	No	
002	0990_MW400_20241019	HDPE (no PTFE)	20 mL	00352312045830	Grey	No	
003	0990_MW403_20241017	HDPE (no PTFE)	20 mL	00352312045889	Grey	No	
003	0990_MW403_20241017	HDPE (no PTFE)	20 mL	00352312046135	Grey	No	
004	0990_OTH111_20241018	HDPE (no PTFE)	20 mL	00352309080088	Grey	No	
004	0990_OTH111_20241018	HDPE (no PTFE)	20 mL	00352309079918	Grey	No	
005	0990_OTH112_241023	HDPE (no PTFE)	20 mL	00352309079827	Grey	No	
005	0990_OTH112_241023	HDPE (no PTFE)	20 mL	00352309080009	Grey	No	
006	0990_MW118I_20241018	HDPE (no PTFE)	20 mL	00352312046020	Grey	No	
006	0990_MW118I_20241018	HDPE (no PTFE)	20 mL	00352312046144	Grey	No	
007	0990_MW118D_20241018	HDPE (no PTFE)	20 mL	00352309079901	Grey	No	
007	0990_MW118D_20241018	HDPE (no PTFE)	20 mL	00352309080086	Grey	No	
008	0990_MW130_20241018	HDPE (no PTFE)	20 mL	00352312045863	Grey	No	
008	0990_MW130_20241018	HDPE (no PTFE)	20 mL	00352312045974	Grey	No	
009	0990_MW131_20241018	HDPE (no PTFE)	20 mL	00352309079934	Grey	No	
009	0990_MW131_20241018	HDPE (no PTFE)	20 mL	00352309079885	Grey	No	
010	0990_MW106_20241018	HDPE (no PTFE)	20 mL	00352312046270	Grey	No	
010	0990_MW106_20241018	HDPE (no PTFE)	20 mL	00352312046292	Grey	No	
011	0990_MW801S_20241018	HDPE (no PTFE)	20 mL	00352312046102	Grey	No	
011	0990_MW801S_20241018	HDPE (no PTFE)	20 mL	00352312046028	Grey	No	
012	0990_MW109_20241018	HDPE (no PTFE)	20 mL	00352312046226	Grey	No	
012	0990_MW109_20241018	HDPE (no PTFE)	20 mL	00352312046246	Grey	No	
013	0990_MW109D_20241018	HDPE (no PTFE)	20 mL	00352312046045	Grey	No	
013	0990_MW109D_20241018	HDPE (no PTFE)	20 mL	00352312045987	Grey	No	

CHAIN OF CUSTODY

COC#: 73714 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual GW October

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

014	0990_MW111S_20241018	HDPE (no PTFE)	20 mL	00352312046181	Grey	No	
014	0990_MW111S_20241018	HDPE (no PTFE)	20 mL	00352312046109	Grey	No	
015	0990_MW111D_20241018	HDPE (no PTFE)	20 mL	00350822016312	Grey	No	
015	0990_MW111D_20241018	HDPE (no PTFE)	20 mL	00350822016561	Grey	No	
016	0990_MW146_20241019	HDPE (no PTFE)	20 mL	00352309080102	Grey	No	
016	0990_MW146_20241019	HDPE (no PTFE)	20 mL	00352309080055	Grey	No	
017	0990_MW802S_20241019	HDPE (no PTFE)	20 mL	00350822083442	Grey	No	
017	0990_MW802S_20241019	HDPE (no PTFE)	20 mL	00350822083489	Grey	No	
018	0990_MW802I_20241019	HDPE (no PTFE)	20 mL	00352312046145	Grey	No	
018	0990_MW802I_20241019	HDPE (no PTFE)	20 mL	00352312046195	Grey	No	
019	0990_MW802D_20241019	HDPE (no PTFE)	20 mL	00350822016217	Grey	No	
019	0990_MW802D_20241019	HDPE (no PTFE)	20 mL	00350822016636	Grey	No	
021	0990_MW803S_20241017	HDPE (no PTFE)	20 mL	00352312046131	Grey	No	
021	0990_MW803S_20241017	HDPE (no PTFE)	20 mL	0035231704A	Grey	No	
022	0990_MW803I_20241017	HDPE (no PTFE)	20 mL	00352312046058	Grey	No	
022	0990_MW803I_20241017	HDPE (no PTFE)	20 mL	00352312045816	Grey	No	
023	0990_MW803D_20241017	HDPE (no PTFE)	20 mL	00352312046111	Grey	No	
023	0990_MW803D_20241017	HDPE (no PTFE)	20 mL	00352312045970	Grey	No	
024	0990_MW136_20241020	HDPE (no PTFE)	20 mL	00352312046123	Grey	No	
024	0990_MW136_20241020	HDPE (no PTFE)	20 mL	00352312045886	Grey	No	
025	0990_MW107_20241018	HDPE (no PTFE)	20 mL	00352312045836	Grey	No	
025	0990_MW107_20241018	HDPE (no PTFE)	20 mL	00352312045773	Grey	No	
026	0990_MW104_20241017	HDPE (no PTFE)	20 mL	00352312045770	Grey	No	
026	0990_MW104_20241017	HDPE (no PTFE)	20 mL	00352312045838	Grey	No	
027	0990_MW110_20241018	HDPE (no PTFE)	20 mL	00352312046337	Grey	No	
027	0990_MW110_20241018	HDPE (no PTFE)	20 mL	00352312045761	Grey	No	
028	0990_MW127_20241018	HDPE (no PTFE)	20 mL	00352309079987	Grey	No	

CHAIN OF CUSTODY

COC#: 73714 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual GW October

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

028	0990_MW127_20241018	HDPE (no PTFE)	20 mL	00352309079824	Grey	No	
029	0990_MW129_20241019	HDPE (no PTFE)	20 mL	00352312046186	Grey	No	
029	0990_MW129_20241019	HDPE (no PTFE)	20 mL	00352312045989	Grey	No	
030	0990_MW135_20241021	HDPE (no PTFE)	20 mL	00352312045935	Grey	No	
030	0990_MW135_20241021	HDPE (no PTFE)	20 mL	00352312046042	Grey	No	
031	0990_MW137_20241020	HDPE (no PTFE)	20 mL	00352312046184	Grey	No	
031	0990_MW137_20241020	HDPE (no PTFE)	20 mL	00352312046289	Grey	No	
032	0990_MW140_241101	HDPE (no PTFE)	20 mL	00352312046353	Grey	No	
032	0990_MW140_241101	HDPE (no PTFE)	20 mL	00352312046346	Grey	No	
033	0990_MW142_20241019	HDPE (no PTFE)	20 mL	00352312046262	Grey	No	
033	0990_MW142_20241019	HDPE (no PTFE)	20 mL	00352312045801	Grey	No	
034	0990_MW144_20241019	HDPE (no PTFE)	20 mL	00352309079999	Grey	No	
034	0990_MW144_20241019	HDPE (no PTFE)	20 mL	00352309080094	Grey	No	
035	0990_MW149_20241019	HDPE (no PTFE)	20 mL	00350822016191	Grey	No	
035	0990_MW149_20241019	HDPE (no PTFE)	20 mL	00350822016370	Grey	No	
036	0990_MW231_20241020	HDPE (no PTFE)	20 mL	00352312045763	Grey	No	
036	0990_MW231_20241020	HDPE (no PTFE)	20 mL	00352312045942	Grey	No	
037	0990_MW244_20241021	HDPE (no PTFE)	20 mL	00352312045971	Grey	No	
037	0990_MW244_20241021	HDPE (no PTFE)	20 mL	00352312046126	Grey	No	
038	0990_MW278_20241022	HDPE (no PTFE)	20 mL	00352309079991	Grey	No	
038	0990_MW278_20241022	HDPE (no PTFE)	20 mL	00352309080115	Grey	No	
039	0990_QC100_20241017	HDPE (no PTFE)	20 mL	00352312045847	Grey	No	
039	0990_QC100_20241017	HDPE (no PTFE)	20 mL	00352312045984	Grey	No	
040	0990_QC101_20241018	HDPE (no PTFE)	20 mL	00352312046340	Grey	No	
040	0990_QC101_20241018	HDPE (no PTFE)	20 mL	00352312046095	Grey	No	
041	0990_QC102_20241019	HDPE (no PTFE)	20 mL	00352309075271	Grey	No	
041	0990_QC102_20241019	HDPE (no PTFE)	20 mL	00352309075393	Grey	No	

CHAIN OF CUSTODY

COC#: 73714 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual GW October

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO: / ES2024AECOMAU001 0

SAMPLER MOBILE:

EMAIL REPORTS TO: [redacted]

042	0990_QC103_20241021	HDPE (no PTFE)	20 mL	00352312045946	Grey	No	
042	0990_QC103_20241021	HDPE (no PTFE)	20 mL	00352312046215	Grey	No	
043	0990_QC203_20241021	HDPE (no PTFE)	20 mL	00352312045880	Grey	No	
043	0990_QC203_20241021	HDPE (no PTFE)	20 mL	00352312046192	Grey	No	
044	0990_QC200_20241017	HDPE (no PTFE)	20 mL	00352312046206	Grey	No	
044	0990_QC200_20241017	HDPE (no PTFE)	20 mL	00352312046234	Grey	No	
045	0990_QC201_20241018	HDPE (no PTFE)	20 mL	00352312046099	Grey	No	
045	0990_QC201_20241018	HDPE (no PTFE)	20 mL	00352312046119	Grey	No	
046	0990_QC202_20241019	HDPE (no PTFE)	20 mL	00352312019238	Grey	No	
046	0990_QC202_20241019	HDPE (no PTFE)	20 mL	00352312019247	Grey	No	
047	0990_QC300_20241017	HDPE (no PTFE)	20 mL	00352312046105	Grey	No	
047	0990_QC300_20241017	HDPE (no PTFE)	20 mL	00352312046296	Grey	No	
048	0990_QC301_20241018	HDPE (no PTFE)	20 mL	00350822016532	Grey	No	
048	0990_QC301_20241018	HDPE (no PTFE)	20 mL	00350822016091	Grey	No	
049	0990_QC302_20241019	HDPE (no PTFE)	20 mL	00352309080051	Grey	No	
049	0990_QC302_20241019	HDPE (no PTFE)	20 mL	00352309079874	Grey	No	
050	0990_QC400_20241017	HDPE (no PTFE)	20 mL	00352312046278	Grey	No	
050	0990_QC400_20241017	HDPE (no PTFE)	20 mL	00352312045861	Grey	No	
051	0990_QC401_20241018	HDPE (no PTFE)	20 mL	00352309079868	Grey	No	
051	0990_QC401_20241018	HDPE (no PTFE)	20 mL	00352309079928	Grey	No	
052	0990_QC402_20241019	HDPE (no PTFE)	20 mL	00352309079845	Grey	No	
052	0990_QC402_20241019	HDPE (no PTFE)	20 mL	00352309080064	Grey	No	
053	0990_QC500_241021	HDPE (no PTFE)	20 mL	00352309087910	Grey	No	
053	0990_QC500_241021	HDPE (no PTFE)	20 mL	00352309087896	Grey	No	
054	0990_QC303_241020	HDPE (no PTFE)	20 mL	00352312046073	Grey	No	
054	0990_QC303_241020	HDPE (no PTFE)	20 mL	00352312045841	Grey	No	
055	0990_QC403_241020	HDPE (no PTFE)	20 mL	00352312045952	Grey	No	

CHAIN OF CUSTODY

COC#: 73714 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual GW October

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

055	0990_QC403_241020	HDPE (no PTFE)	20 mL	00352312046097	Grey	No	
056	0990_QC304_241021	HDPE (no PTFE)	20 mL	00352312046350	Grey	No	
056	0990_QC304_241021	HDPE (no PTFE)	20 mL	00352312046253	Grey	No	
057	0990_QC404_241021	HDPE (no PTFE)	20 mL	00352312045980	Grey	No	
057	0990_QC404_241021	HDPE (no PTFE)	20 mL	00352312045932	Grey	No	
058	0990_QC305_241022	HDPE (no PTFE)	20 mL	00352312045978	Grey	No	
058	0990_QC305_241022	HDPE (no PTFE)	20 mL	00352312046242	Grey	No	
059	0990_QC405_241022	HDPE (no PTFE)	20 mL	00352312046036	Grey	No	
059	0990_QC405_241022	HDPE (no PTFE)	20 mL	00352312045896	Grey	No	
060	0990_QC406_241023	HDPE (no PTFE)	20 mL	00352312046249	Grey	No	
060	0990_QC406_241023	HDPE (no PTFE)	20 mL	00352312045822	Grey	No	
061	0990_QC306_241023	HDPE (no PTFE)	20 mL	00352309079865	Grey	No	
061	0990_QC306_241023	HDPE (no PTFE)	20 mL	00352309080005	Grey	No	
062	0990_MW133_241101	HDPE (no PTFE)	20 mL	00352312045995	Grey	No	
062	0990_MW133_241101	HDPE (no PTFE)	20 mL	00352312045975	Grey	No	

Total Bottle Count: ALS: 122, Non ALS: 0

Mandatory Fields	CHAIN OF CUSTODY		Page ___of___
CLIENT CODE: AECOM AU	*PROJECT MANAGER: [redacted]	SAMPLER: [redacted]	
*CLIENT: AECOM	*PM MOBILE: [redacted]	SAMPLER MOBILE: [redacted]	CoC #: (if applicable)
OFFICE: (Invoiced Office) Darwin	ALS QUOTE # (Client PL if blank) ES2024AECOMAU0010	PURCHASE ORDER NO.:	
PROJECT NO./PROJECT: 60676801		SITE: Tindal	

*INVOICE TO: (client default if nil) [redacted] ☐ CC Invoice to PM

*EMAIL REPORTS TO: (default to PM if blank) [redacted]

BIOSECURITY

Country of Origin: (if not Australia)

Environmental Division Sydney
Work Order Reference
ES2436471

Telephone : + 61-2-8784 8555

*** STORAGE REQUIREMENTS** Please check box. →
Standard Storage time from receipt of samples.
Waters - 3 weeks
Soils - 2 months

☒ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** Please check box. →
(Not all tests can be expedited, contact Client Services for more information)

☐ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

Comments:

***ANALYSIS REQUIRED**
(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Tick an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Bioslid (SS)	PFAS X Full Suite											Lab QC (additional bottles req.) Dup	MS	Additional information (Comment on hazards - e.g., asbestos, known high contamination)
1	0990_OTH113_241107		07/11/24	2	W	X											☐	☐	
																	☐	☐	
																	☐	☐	
																	☐	☐	
																	☐	☐	
																	☐	☐	
																	☐	☐	
																	☐	☐	
																	☐	☐	
																	☐	☐	

Receipt Detail (Lab Use ONLY)
Chilling Method: Ice: Frozen / Melted Ice Bricks: Frozen / Thawed None
Sample Temp at Receipt °C °C °C
Security Seal Intact (circle) Yes / No / NA(None)
Carrier Details ☐ Courier/Post ☐ Client
Con Note # [redacted]
Packaging: (Circle) Hard Esky Foam Esky Box/Bag/Other
Count # # #

Relinquished by: [redacted] Date/Time: 8/11 11:00am Received by: [redacted] Date/Time: 8/11 11:00
Relinquished by: [redacted] Date/Time: Received by: [redacted] Date/Time: 12/11/24 1100

ALSCompass SAMPLING Intelligence

ALS

ESky 2&4

ALS Use Only

Custody Document for Submissions via ALS Compass App

Project: 6067680l

Client: DoD

Project Manager: [redacted]

Phone: ([redacted]

ALS Compass COC Reference: 737 [illegible]

Samples: 62

Sampler: [redacted]

Phone: ([redacted]

Turnaround Requirements: Standard X Urgent

Special Instructions:	ALS Use Only			
0990_MW149_241019 = Please analyse, Samples provided	Custody seal intact?	YES	NO	(N/A)
	Free ice / frozen ice bricks upon receipt?	(YES)	NO	N/A
	Random sample temperature on receipt?	2.8	°C	

Custody:

Relinquished by:	Received by:	Relinquished by:	Received by:
[redacted]	[redacted]		[redacted]
Date / Time: 4.11	Date / Time: 04 NOV 2024 1130	Date / Time:	Date / Time: 5/11/24 12:30

AECOM

 Chain of Custody

AECOM Australia Pty Ltd
[redacted]

[redacted]

Laboratory Details
Lab. Name: ALS
[redacted]
Lab. Ref:

Tel: 8784 8555
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY/139/19 v5

Sampled By: [redacted]

Project Name: NT_0990_PFASOMP_23

AECOM Project #: 60612561/3.1

Purchase Order No:

Specifications: Please report in ESdat format — RE-FREEZE BIOTA SAMPLES

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr 5 days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: RE-FREEZE BIOTA SAMPLES)	Y

6. Report Format: ESdat

7. Project Manager:

Analysis Request

Subcon / Forward Lab / Split WO
Lab / Analyst: NMT
Organised By / Date:
Relinquished By / Date:
Consignee / Courier: QC FwD
WO No: ES2434947
Attach By PO / Internal Sheet:

Lab. ID	Sample ID	Sampling Date	Matrix: biota	Matrix: water	Matrix:	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: frozen	Container (No. & type)	HOLD	Notes
1	0990_BIOAFA485_241015	15 Oct 2024	X						X	Snap bag	X	re-freeze when on hold
2	0990_BIOAFA486_241015	15 Oct 2024	X						X	Snap bag	X	re-freeze when on hold
3	0990_BIOAFA487_241015	15 Oct 2024	X						X	Snap bag	X	re-freeze when on hold
4	0990_BIOAFA488_241015	15 Oct 2024	X						X	Snap bag	X	re-freeze when on hold
5	0990_BIOAFA489_241015	15 Oct 2024	X						X	Snap bag	X	re-freeze when on hold
6	0990_BIOAFA490_241015	15 Oct 2024	X						X	Snap bag	X	re-freeze when on hold
7	0990_BIOAFA491_241015	15 Oct 2024	X						X	Snap bag	X	re-freeze when on hold
8	0990_BIOAFA492_241015	15 Oct 2024	X						X	Snap bag	X	re-freeze when on hold
9	0990_BIOAFA493_241015	15 Oct 2024	X						X	Snap bag	X	re-freeze when on hold
10	0990_BIOAFA494_241015	15 Oct 2024	X						X	Snap bag	X	re-freeze when on hold
11	0990_BIOAFA495_241015	15 Oct 2024	X						X	Snap bag	X	re-freeze when on hold
12	0990_BIOAFA496_241015	15 Oct 2024	X						X	Snap bag	X	re-freeze when on hold
13	0990_BIOAFA497_241015	15 Oct 2024	X						X	Snap bag	X	re-freeze when on hold
14	0990_BIOAFA498_241015	15 Oct 2024	X						X	Snap bag	X	re-freeze when on hold

Environmental Division
Sydney
Work Order Reference
ES2434947
Telephone : - 61-2-8784 8555

Comments: [redacted]

Temp. received: °C

Report & invoice: [redacted]

Lab Report No

Esky ID

Relinquished by: [redacted]	Signed:	Date: 21/10/2024	Relinquished by:
Received by: [redacted]	Signed:	Date:	Received by:

Date:

Date:

25/10 1210

AECOM

 Chain of Custody

AECOM Australia Pty Ltd

[redacted]

[redacted]

Laboratory Details

Lab. Name: ALS

[redacted]

Lab. Ref:

Tel: 8784 8555

Fax:

Preliminary Report by:

Final Report by:

Lab Quote No: SY/139/19 v5

Sampled By: [redacted]

Project Name: NT_0990_PFASOMP_23

AECOM Project #: 60612561/3.1

Purchase Order No:

Specifications: Please report in ESdat format — RE-FREEZE BIOTA SAMPLES

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr 5 days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: RE-FREEZE BIOTA SAMPLES)	Y

6. Report Format: ESdat

7. Project Manager:

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: biota	Matrix: water	Matrix:	Preservation: fill'ed	Preservation: acid	Preservation: ice	Preservation: frozen	Container (No. & type)	HOLD											Notes
15	0990_BIOAFA499_241015	15 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
16	0990_BIOAFA500_241015	15 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
17	0990_BIOAFA501_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
18	0990_BIOAFA502_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
19	0990_BIOAFA503_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
20	0990_BIOAFA504_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
21	0990_BIOAFA505_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
22	0990_BIOAFA506_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
23	0990_BIOAFA507_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
24	0990_BIOAFA508_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
25	0990_BIOAFA509_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
26	0990_BIOAFA510_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
27	0990_BIOAFA511_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
28	0990_BIOAFA512_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold

Comments: [redacted]

Temp. received: °C

Report & invoice [redacted]

Lab Report No.

Esky ID

Relinquished by: [redacted] Date: 21/10/2024

Relinquished by: Date:

Received by: [redacted] Date:

Received by: Date:

AECOM 0990 PAGE 3 of 5 **Chain of Custody**

AECOM Australia Pty Ltd
[redacted]

Laboratory Details
Lab. Name: ALS
[redacted]
Lab. Ref:

Tel: 8784 8555
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY/139/19 v5

Sampled By: [redacted] **Project Name: NT_0990_PFASOMP_23** **AECOM Project #: 60612561/3.1** **Purchase Order No:**

Specifications: Please report in ESdat format RE-FREEZE BIOTA SAMPLES

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr 5 days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: RE-FREEZE BIOTA SAMPLES)	Y

6. Report Format: ESdat 7. Project Manager:

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: biota	Matrix: water	Matrix:	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: frozen	Container (No. & type)	HOLD											Notes
29	0990_BIOAFA513_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
30	0990_BIOAFA514_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
31	0990_BIOAFA515_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
32	0990_BIOAFA516_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
33	0990_BIOAFA517_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
34	0990_BIOAFA518_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
35	0990_BIOAFA519_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
36	0990_BIOAFA520_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
37	0990_BIOAFA521_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
38	0990_BIOAFA522_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
39	0990_BIOAFA523_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
40	0990_BIOAFA524_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
–																						
–																						

Comments: [redacted] Temp. received: °C Report & invoice [redacted] Lab Report No. Esky ID

Relinquished by: [redacted] Date: 21/10/2024 Relinquished by: Date:

Received by: Signed: Date: Received by: Date:

AECOM 0990 PAGE 4 of 5 **Chain of Custody**

AECOM Australia Pty Ltd
[redacted]

Laboratory Details
Lab. Name: ALS
[redacted]
Lab. Ref:

Tel: 8784 8555
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY/139/19 v5

Sampled By [redacted] **Project Name: NT_0990_PFASOMP_23** **AECOM Project #: 60612561/3.1** **Purchase Order No:**

Specifications: Please report in ESdat format — RE-FREEZE BIOTA SAMPLES

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr 5 days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: RE-FREEZE BIOTA SAMPLES)	Y

6. Report Format: ESdat 7. Project Manager:

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: biota	Matrix: water	Matrix:	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: frozen	Container (No. & type)	HOLD											Notes
41	0990_QC156_241016	16 Oct 2024		X				X		Bottle	X											
42	0990_QC157_241015	15 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
43	0990_QC158_241015	15 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
44	0990_QC159_241015	15 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
45	0990_QC160_241015	15 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
46	0990_QC161_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
47	0990_QC162_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
48	0990_QC163_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
49	0990_QC164_241016	16 Oct 2024	X						X	Snap bag	X											re-freeze when on hold
~~50~~	0990_QC206_241016	16 Oct 2024		X				X		Bottle	X											Water - PLS FWD TO NMI
~~51~~	0990_QC207_241015	15 Oct 2024	X						X	Snap bag	X											Frozen biota - PLS FWD TO NMI
~~52~~	0990_QC208_241015	15 Oct 2024	X						X	Snap bag	X											Frozen biota - PLS FWD TO NMI
~~53~~	0990_QC209_241016	16 Oct 2024	X						X	Snap bag	X											Frozen biota - PLS FWD TO NMI
~~54~~	0990_QC210_241016	16 Oct 2024	X						X	Snap bag	X											Frozen biota - PLS FWD TO NMI

Comments: [redacted] Temp. received: °C Report & invoice: [redacted] Lab Report No. Esky ID

Relinquished by: [redacted] Date: 21/10/2024 Relinquished by: Date:

Received by: [redacted] Date: Received by: Date:

AECOM 0990 PAGE 5 of 5 Chain of Custody

AECOM Australia Pty Ltd
[redacted]

Laboratory Details
Lab. Name: ALS
[redacted]
Lab. Ref:

Tel: 8784 8555
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY/139/19 v5

Sampled By [redacted] **Project Name: NT_0990_PFASOMP_23** **AECOM Project #: 60612561/3.1** **Purchase Order No:**

Specificatio [redacted] RE-FREEZE BIOTA SAMPLES

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr 5 days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: RE-FREEZE BIOTA SAMPLES)	Y

6. Report Format: ESdat 7. Project Manager:

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: biota	Matrix: water	Matrix:	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: frozen	Container (No. & type)	HOLD	Notes
50	0990_QC308_241017	17 Oct 2024		X				X		Bottle	X	
51	0990_QC309_241017	17 Oct 2024		X				X		Bottle	X	
52	0990_QC401_241015	15 Oct 2024		X				X		Bottle	X	
53	0990_QC402_241016	16 Oct 2024		X				X		Bottle	X	
54	0990_QC507_241017	17 Oct 2024		X				X		Bottle	X	
56	0990_QC508_241017	17 Oct 2024		X				X		Bottle	X	
56	0990_SW151_241016	16 Oct 2024		X				X		Bottle	X	
											X	
											X	
											X	
											X	
											X	
											X	
											X	

Comments: Please send ESdat files to DERP.labreports@esdat.com.au and ensure that [redacted]ME

Temp. received: °C

Report & invoice: AP_CustomerServiceANZ@aecom.com

Lab Report No. Esky ID

Relinquished by: [redacted] Signed: Date: 21/10/2024 Relinquished by: Date:

Received by: [redacted] Signed: Date: Received by: Date:

25/10 1205

CHAIN OF CUSTODY

COC#: 73719 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	[redacted]
DATE TIME:	DATE TIME:	DATE TIME:	5/11/24 12:30

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual SW

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_SW161_221101		01/11/2024 11:00 AM	WATER	ALS: 2 Non ALS: 0	No	X		
002	0990_SW110_241030		30/10/2024 06:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		
003	0990_SW100_241030		30/10/2024 05:30 PM	WATER	ALS: 2 Non ALS: 0	No	X		
004	0990_SW108_241030		30/10/2024 05:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		
005	0990_SW153_241030		30/10/2024 05:20 PM	WATER	ALS: 2 Non ALS: 0	No	X		
006	0990_QC101_241101		04/11/2024 11:11 AM	WATER	ALS: 2 Non ALS: 0	No	X		
007	0990_QC201_241101	Send to ALS Brisbane	04/11/2024 11:12 AM	WATER	ALS: 2 Non ALS: 0	No	X		

Sample / Fo[redacted]
Lab / Analys[redacted]
Organised By / Date: [redacted]
Relinquished By / Date: 5/11/24
Courier / Courier:
WO No: ES2435723
Attach By PO / Internal Sheet:

Environmental Division
Sydney
Work Order Reference
ES2435723

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 73719 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual SW

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
008	0990_QC301_241101	Rinsate	01/11/2024 04:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		
009	0990_QC401_241101	Field blank	01/11/2024 04:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		

CHAIN OF CUSTODY

COC#: 73719 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual SW

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

EMAIL REPORTS TO: [redacted]

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: / ES2024AECOMAU0010

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_SW161_221101	HDPE (no PTFE)	20 mL	00352309080037	Grey	No	
001	0990_SW161_221101	HDPE (no PTFE)	20 mL	00352309079924	Grey	No	
002	0990_SW110_241030	HDPE (no PTFE)	20 mL	00352312045871	Grey	No	
002	0990_SW110_241030	HDPE (no PTFE)	20 mL	00352312046143	Grey	No	
003	0990_SW100_241030	HDPE (no PTFE)	20 mL	00352312046309	Grey	No	
003	0990_SW100_241030	HDPE (no PTFE)	20 mL	00352312046081	Grey	No	
004	0990_SW108_241030	HDPE (no PTFE)	20 mL	00352312045919	Grey	No	
004	0990_SW108_241030	HDPE (no PTFE)	20 mL	00352312046116	Grey	No	
005	0990_SW153_241030	HDPE (no PTFE)	20 mL	00352312045772	Grey	No	
005	0990_SW153_241030	HDPE (no PTFE)	20 mL	00352312046221	Grey	No	
006	0990_QC101_241101	HDPE (no PTFE)	20 mL	00352312046310	Grey	No	
006	0990_QC101_241101	HDPE (no PTFE)	20 mL	00352312046313	Grey	No	
007	0990_QC201_241101	HDPE (no PTFE)	20 mL	00352312046274	Grey	No	
007	0990_QC201_241101	HDPE (no PTFE)	20 mL	00352312046321	Grey	No	
008	0990_QC301_241101	HDPE (no PTFE)	20 mL	00352312046086	Grey	No	
008	0990_QC301_241101	HDPE (no PTFE)	20 mL	00352312046339	Grey	No	
009	0990_QC401_241101	HDPE (no PTFE)	20 mL	00352312046100	Grey	No	
009	0990_QC401_241101	HDPE (no PTFE)	20 mL	00352312045806	Grey	No	

Total Bottle Count: ALS: 18, Non ALS: 0

ALSCompass SAMPLING Intelligence

ALS

BKY 284

ALS Use Only

Custody Document for Submissions via ALS Compass App

Project: 60676801 Client: DoD Project Manager: [redacted]

Phone: ([redacted]

ALS Compass COC Reference: 73719 # Samples: 9 Sampler: [redacted]

Phone: ([redacted]

Turnaround Requirements: Standard X Urgent

Special Instructions:	ALS Use Only			
	Custody seal intact?	YES	NO	N/A
	Free ice / frozen ice bricks upon receipt?	YES	NO	N/A
	Random sample temperature on receipt?	9.3	°C	

Custody:

Relinquished by:	Received by:	Relinquished by:	Received by:
[redacted]	[redacted] 1130		[redacted]
Date / Time: 4.11	Date / Time: 04 NOV 2024	Date / Time:	Date / Time: 5/11/24 12:30

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐BRISBANE 2 Byth Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5690 E: gladstone@alsglobal.com
☐MACKAY 79 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 1/29 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5/585 Maitland Road Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: AECOM
OFFICE: Darwin
PROJECT: NT_0990_PFASMGMT_24 PROJECT NO [redacted]
ORDER NUMBER: PURCHASE ORDER NO [redacted]
PROJECT MANAGER: [redacted] CONTACT PH: [redacted]
SAMPLER [redacted] SAMPLER MOBILE [redacted]
COC Emailed to ALS? (YES) EDD FORMAT (or default):
[redacted]

TURNAROUND REQUIREMENTS : ☐ Standard TAT (List due date):
(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.:
COUNTRY OF ORIGIN:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

[redacted] BY: [redacted]
DATE/TIME: 9 DEC 2024 DATE/TIME: 3:25 10 DEC 2024
RELINQUISHED BY: DATE/TIME:
RECEIVED BY: [redacted] DATE/TIME: 12/12/24 11:30

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	EP231x - PFAS								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	0990_MW403_241209	9/12/24	w	2 x PFAS	2	x								
2	0990_QC100_241209	9/12/24	w	2 x PFAS	2	x								On hold
3	0990_QC200_241209	9/12/24	w	2 x PFAS	2	x								On hold
4	0990_QC300_241209	9/12/24	w	2 x PFAS	2	x								On hold
5	0990_QC400_241209	9/12/24	w	2 x PFAS	2	x								On hold
				TOTAL										

Environmental Division
Sydney
Work Order Reference
ES2440429
[redacted]

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

CHAIN OF CUSTODY

COC#: 73713 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 22/10/24 1130

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: October 24 PP QC's

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE: [redacted]

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_QC100_241015		17/10/2024 10:11 AM	WATER	ALS: 2 Non ALS: 0	No	X		
002	0990_QC101_241016		16/10/2024 10:12 AM	WATER	ALS: 2 Non ALS: 0	No	X		
~~003~~	0990_QC200_241015	Please send to ALS Brisbane	15/10/2024 10:11 AM	WATER	ALS: 2 Non ALS: 0	No	X		
~~004~~	0990_QC201_241016	Please send to ALS Brisbane	16/10/2024 10:13 AM	WATER	ALS: 2 Non ALS: 0	No	X		
005	0990_QC300_241015		15/10/2024 06:57 PM	WATER	ALS: 2 Non ALS: 0	No	X		
006	0990_QC301_241016		16/10/2024 09:15 AM	WATER	ALS: 2 Non ALS: 0	No	X		
007	0990_QC302_241017		17/10/2024 08:58 AM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Brisbane

Work Order Reference

EB2436756

[redacted]

Forward Lab / Split WO

Analysis: ~~Forms~~ ALS Brisbane

Authorised By / Date:

Relinquished By / Date:

Route / Courier: QC FWD

Ref No: ES2433855

Sent By PO / Internal Sheet:

CHAIN OF CUSTODY

COC#: 73713 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: October 24 PP QC's

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE: [redacted]

EMAIL REPORTS TO [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
008	0990_QC400_241015		15/10/2024 06:54 PM	WATER	ALS: 2 Non ALS: 0	No	X		
009	0990_QC401_241016		16/10/2024 09:15 AM	WATER	ALS: 2 Non ALS: 0	No	X		
010	0990_QC402_241017		17/10/2024 09:00 AM	WATER	ALS: 2 Non ALS: 0	No	X		
011	0990_QC500_241011		11/10/2024 10:21 AM	WATER	ALS: 2 Non ALS: 0	No	X		

CHAIN OF CUSTODY

COC#: 74969 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	[redacted] DATE TIME: 07/11 1030	DATE TIME:	[redacted] 5/11/24 12:30

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: QC PP October

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE: [redacted]

EMAIL REPORTS TO [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
~~001~~	0990_QC100_241030		04/11/2024 12:26 PM	WATER	ALS: 2 Non ALS: 0	No	X		
~~002~~ 1	0990_QC200_241030	send to als brisbane	04/11/2024 12:26 PM	WATER	ALS: 2 Non ALS: 0	No	X		
~~003~~	0990_QC300_241030		30/10/2024 04:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		
~~004~~	0990_QC400_241030		30/10/2024 04:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Brisbane

Work Order Reference

EB2438420

[redacted]

Section / Forward PO / Split WO

PO / Analysis: Bc [redacted]

Dispatched By / Date:

Relinquished By / Date: 5/11/24

Courier / Couriers:

WO No: ES2455725

Attach By PO / Internal Sheet:

Mandatory Fields	CHAIN OF CUSTODY		Page ___of___
CLIENT CODE: AECOM AU	*PROJECT MANAGER: [redacted]	SAMPLER: [redacted]	
*CLIENT: AECOM	*PM MOBILE: [redacted]	SAMPLER MOBILE:	CoC #: (if applicable)
OFFICE: (Invoiced Office) Darwin	ALS QUOTE # (Client PL if blank) ES2024AECOMAU0010	PURCHASE ORDER NO.: [redacted]	
PROJECT NO./PROJECT: 60676801		SITE: Tindal	

*INVOICE TO [redacted] ☐ CC Invoice to PM

*EMA[redacted] REPORTS TO [redacted] (default to PM blan[redacted]

BIOSECURITY

Country of Origin: (if not Australia)

Environmental Division Sydney
Work Order Reference
ES2436471

Telephone : + 61-2-8784 8555

*** STORAGE REQUIREMENTS** Please check box →
Standard Storage time from receipt of samples.
Waters - 3 weeks
Soils - 2 months

☑ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** Please check box →
(Not all tests can be expedited, contact Client Services for more information)

☑ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

***ANALYSIS REQUIRED**
(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
[illegible] an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

Comments:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Bioslid (SS)	PFAS X Full Suite											Lab QC (additional bottles req.) Dup	MS	Additional information (Comment on hazards - e.g., asbestos, known high contamination)
1	0990_OTH113_241107		07/11/24	2	W	X											☐	☐	
																	☐	☐	
																	☐	☐	
																	☐	☐	
																	☐	☐	
																	☐	☐	
																	☐	☐	
																	☐	☐	
																	☐	☐	
																	☐	☐	

Receipt Detail (Lab Use ONLY)
Chilling Method: Ice: Frozen / Melted Ice Bricks: Frozen / Thawed None
Sample Temp at °C °C °C
Security Seal Intact (circle) Yes / No / NA(None)
Carrier Details ☐ Courier/Post ☐ Client
Con Note # [redacted]
Packaging: (Circle) Hard Esky Foam Esky Box/Bag/Other
Count # # #

Relinquished by: [redacted] Date/Time: 8/11 11:00am Received by: [redacted] Sig[redacted] Date/Time: 8/11 11:00
Relinquished by: [redacted] Date/Time: Received by: [redacted] Sig[redacted] Date/Time: 12/11/24 1100

CHAIN OF CUSTODY

COC#: 74969 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: QC PP October

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE: / [redacted]

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_QC100_241030	HDPE (no PTFE)	20 mL	00352309080023	Grey	No	
001	0990_QC100_241030	HDPE (no PTFE)	20 mL	00352309080026	Grey	No	
002	0990_QC200_241030	HDPE (no PTFE)	20 mL	00352312045800	Grey	No	
002	0990_QC200_241030	HDPE (no PTFE)	20 mL	00352309080018	Grey	No	
003	0990_QC300_241030	HDPE (no PTFE)	20 mL	00352312045821	Grey	No	
003	0990_QC300_241030	HDPE (no PTFE)	20 mL	00352312046017	Grey	No	
004	0990_QC400_241030	HDPE (no PTFE)	20 mL	00352312046315	Grey	No	
004	0990_QC400_241030	HDPE (no PTFE)	20 mL	00352312046190	Grey	No	

Total Bottle Count: ALS: 8, Non ALS: 0

ALSCompass SAMPLING Intelligence

ALS

ESKJ 284

ALS Use Only

Custody Document for Submissions via ALS Compass App

Project: 60676801 Client: DoD Project Manag[redacted]

Phone:

ALS Compass COC Reference: 74969 # Samples: 4 Sampler:

Phone:

Turnaround Requirements: Standard X Urgent

Special Instructions:	ALS Use Only			
	Custody seal intact?	YES	NO	N/A
	Free ice / frozen ice bricks upon receipt?	YES	NO	N/A
	Random sample temperature on receipt?	9.2 °C		

Custody:

Relinquished by:	Received by:	Relinquished by:	[redacted]
[redacted]	[redacted]		
Date / Time: 4.11	Date / Time: 1130 04 NOV 2024	Date / Time:	Date / Time: 5/11/24 12:30

EB, LC-146

CHAIN OF CUSTODY

COC#: 73708 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY: [redacted]
DATE TIME:	DATE TIME:	DATE TIME: 22/10/24 1130

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT131

ORDER NO: 60676801/

PROJECT MANAGER [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE: [redacted]

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT131_241015		15/10/2024 05:34 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2433851

[redacted]

CHAIN OF CUSTODY

COC#: 74969 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY: [redacted]
DATE TIME:	DATE TIME:	DATE TIME: 5/11/24 12:30

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: QC PP October

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE: [redacted]

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_QC100_241030		04/11/2024 12:26 PM	WATER	ALS: 2 Non ALS: 0	No	X		
002	0990_QC200_241030	send to als brisbane	04/11/2024 12:28 PM	WATER	ALS: 2 Non ALS: 0	No	X		
003	0990_QC300_241030		30/10/2024 04:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		
004	0990_QC400_241030		30/10/2024 04:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney
Work Order Reference
ES2435725

[redacted]

Received / Forwarded Lab / Split WO
Lab / Analysis: [redacted]
Received By / Date
Relinquished By / Date: 5/11/24
Courier / Consignment
WO No: ES2435725
Attach By WO / Transport Sheet

CHAIN OF CUSTODY

COC#: 74969 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: QC PP October

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE: [redacted]

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_QC100_241030	HDPE (no PTFE)	20 mL	00352309080023	Grey	No	
001	0990_QC100_241030	HDPE (no PTFE)	20 mL	00352309080026	Grey	No	
002	0990_QC200_241030	HDPE (no PTFE)	20 mL	00352312045800	Grey	No	
002	0990_QC200_241030	HDPE (no PTFE)	20 mL	00352309080018	Grey	No	
003	0990_QC300_241030	HDPE (no PTFE)	20 mL	00352312045821	Grey	No	
003	0990_QC300_241030	HDPE (no PTFE)	20 mL	00352312046017	Grey	No	
004	0990_QC400_241030	HDPE (no PTFE)	20 mL	00352312046315	Grey	No	
004	0990_QC400_241030	HDPE (no PTFE)	20 mL	00352312046190	Grey	No	

Total Bottle Count: ALS: 8, Non ALS: 0

CHAIN OF CUSTODY

COC#: 74969 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	[redacted] DATE TIME: 07/11 1030	DATE TIME:	[redacted] 5/11/24 12:30

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: QC PP October

ORDER NO: 60676801/

PROJECT MANAGER: [redacted] CONTACT PH: SAMPLER MOBILE: [redacted]

PRIMARY SAMPLER: QUOTE NO:

EMAIL REPORTS TO [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
~~001~~	0990_QC100_241030		04/11/2024 12:26 PM	WATER	ALS: 2 Non ALS: 0	No	X		
~~002~~ 1	0990_QC200_241030	send to als brisbane	04/11/2024 12:26 PM	WATER	ALS: 2 Non ALS: 0	No	X		
~~003~~	0990_QC300_241030		30/10/2024 04:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		
~~004~~	0990_QC400_241030		30/10/2024 04:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Brisbane

Work Order Reference

EB2438420

[redacted]

Section / Forward PO / Split WO

PO / Analysis: [redacted]

Dispatched By / Date

Relinquished By / Date: 5/11/24

Courier / Courier:

WO No: ES2455725

Attach By PO / Internal Sheet:

CHAIN OF CUSTODY

COC#: 74969 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: QC PP October

ORDER NO: 60676801/

PROJECT MANAGE[redacted]

PRIMARY SAMPLER[redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/[redacted]

EMAIL REPORTS TO[redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_QC100_241030	HDPE (no PTFE)	20 mL	00352309080023	Grey	No	
001	0990_QC100_241030	HDPE (no PTFE)	20 mL	00352309080026	Grey	No	
002	0990_QC200_241030	HDPE (no PTFE)	20 mL	00352312045800	Grey	No	
002	0990_QC200_241030	HDPE (no PTFE)	20 mL	00352309080018	Grey	No	
003	0990_QC300_241030	HDPE (no PTFE)	20 mL	00352312045821	Grey	No	
003	0990_QC300_241030	HDPE (no PTFE)	20 mL	00352312046017	Grey	No	
004	0990_QC400_241030	HDPE (no PTFE)	20 mL	00352312046315	Grey	No	
004	0990_QC400_241030	HDPE (no PTFE)	20 mL	00352312046190	Grey	No	

Total Bottle Count: ALS: 8, Non ALS: 0

ALSCompass SAMPLING Intelligence

ALS

ESKJ 2\$4

ALS Use Only

Custody Document for Submissions via ALS Compass App

Project: 60676801 Client: DoD Project Manager: [redacted]

Phone:

ALS Compass COC Reference: 74969 # Samples: 4 Sampler:

Phone:

Turnaround Requirements: Standard X Urgent

Special Instructions:	ALS Use Only			
	Custody seal intact?	YES	NO	N/A
	Free ice / frozen ice bricks upon receipt?	YES	NO	N/A
	Random sample temperature on receipt?	9.2 °C		

Custody:

Relinquished by:	Received by:	Relinquished by:	[redacted]
[redacted]	[redacted]		[redacted]
Date / Time: 4.11	Date / Time: 1130 04 NOV 2024	Date / Time:	Date / Time: 5/11/24 12:30

EB, LC-146

Mandatory Fields

CHAIN OF CUSTODY

Page ___of___

CoC #: (if applicable)

CLIENT CODE:	AECOM AU	*PROJECT MANAGER:	[redacted]
*CLIENT:	AECOM	*PM MOBILE:	[redacted]
OFFICE: (Invoiced Office)	[redacted]	ALS QUOTE # (Client PL if blank)	ES2024AECOMAU0010
PROJECT NO./PROJECT:	60676801		

SAMPLER:	[redacted]
SAMPLER MOBILE:	[redacted]
PURCHASE ORDER NO.:	[redacted]
SITE:	[redacted]

*INVOICE T[redacted] (client default if [redacted]

☐ CC Invoice to PM

*EMA[redacted]

REPORTS T[redacted] (default to PM [redacted] bla[redacted]

BIOSECURITY

Country of Origin: (if not Australia)

Environmental Division Brisbane

Work Order Reference

EB2439270

[redacted]

***ANALYSIS REQUIRED**

(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)

[redacted]tals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).

[redacted]he boxes below analysis to indicate the parameter listed above to be tested on that sample.

*** STORAGE REQUIREMENTS**

Please check box. →

Standard Storage time from receipt of samples:

Waters - 3 weeks
Soils - 2 months

☐ Standard Storage

☐ Extended Storage

Specify Disposal Date:

Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND**

Please check box. →

(Not all tests can be expedited, contact Client Services for more information)

☑ 5+ days (no surcharge)

☐ 3 day (+15%)

☐ 2 day (+30%)

☐ 1 day (+50%)

Comments:

EP2314 - Final

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)			Lab QC (additional bottles req.) Dup	MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
1	0990_QC100_24/07		07/4/24	2	W	X		☐	☐	
2	0990_QC200_24/07			2	W	X		☐	☐	Forward to ALS
3	0990_QC300_24/07			2	W	X		☐	☐	
4	0990_QC400_24/07			2	W	X		☐	☐	HOLD
5	0990_QC500_24/07			2	W	X		☐	☐	HOLD
								☐	☐	
								☐	☐	
								☐	☐	
								☐	☐	
								☐	☐	

Subcon / Forward Lab / Split WO: (Forward Lab)

Lab / Analysis: ALS Brisbane

Organised By / Date:

Relinquished By / Date:

Consote / Courier: QC FWD

WO No: ES2436478

Attached By PO / Internal Sheet:

Receipt Detail (Lab Use ONLY)	Chilling Method:	Ice: Frozen / Melted	Ice Bricks: Frozen / Thawed	None	Sample Temp at Receipt	°C °C °C
Security Seal Intact (circle)	Yes / No / NA(None)	Carrier Details	☐ Courier/Post	☐ Client	Con Note #	
Packaging: (Circle)	Hard Esky	Foam Esky	Box/Bag/Other			
Count	#	#	#			

Relinquished [redacted] Date/Time: 8/11 11:00am

Relinquished [redacted] Date/Time: 12/11/24 1100

[redacted] 13/11/24 @ 10:00

CHAIN OF CUSTODY

COC#: 73714 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	[redacted] BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 07/11 1030

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual GW October

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE: / [redacted]

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Watais - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
~~043~~ 1	0990_QC203_20241021	Send to ALS Brisbane	21/10/2024 07:55 PM	WATER	ALS: 2 Non ALS: 0	No	X		
~~044~~ 2	0990_QC200_20241017	Send to ALS Brisbane	17/10/2024 08:05 PM	WATER	ALS: 2 Non ALS: 0	No	X		
~~045~~ 3	0990_QC201_20241018	Send to ALS Brisbane	19/10/2024 01:17 PM	WATER	ALS: 2 Non ALS: 0	No	X		
~~046~~ 4	0990_QC202_20241019	Send to ALS Brisbane	19/10/2024 01:06 PM	WATER	ALS: 2 Non ALS: 0	No	X		
~~047~~	0990_QC300_20241017	rinsate	17/10/2024 08:07 PM	WATER	ALS: 2 Non ALS: 0	No	X		
~~048~~	0990_QC301_20241018	rinsate	19/10/2024 02:01 PM	WATER	ALS: 2 Non ALS: 0	No	X		
~~049~~	0990_QC302_20241019	rinsate	19/10/2024 01:59 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Brisbane

Work Order Reference

EB2438426

[redacted]

CHAIN OF CUSTODY

COC#: 73714 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual GW October

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE: / [redacted]

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

042	0990_QC103_20241021	HDPE (no PTFE)	20 mL	00352312045946	Grey	No	
042	0990_QC103_20241021	HDPE (no PTFE)	20 mL	00352312046215	Grey	No	
043	0990_QC203_20241021	HDPE (no PTFE)	20 mL	00352312045880	Grey	No	
043	0990_QC203_20241021	HDPE (no PTFE)	20 mL	00352312046192	Grey	No	
044	0990_QC200_20241017	HDPE (no PTFE)	20 mL	00352312046206	Grey	No	
044	0990_QC200_20241017	HDPE (no PTFE)	20 mL	00352312046234	Grey	No	
045	0990_QC201_20241018	HDPE (no PTFE)	20 mL	00352312046099	Grey	No	
045	0990_QC201_20241018	HDPE (no PTFE)	20 mL	00352312046119	Grey	No	
046	0990_QC202_20241019	HDPE (no PTFE)	20 mL	00352312019238	Grey	No	
046	0990_QC202_20241019	HDPE (no PTFE)	20 mL	00352312019247	Grey	No	
047	0990_QC300_20241017	HDPE (no PTFE)	20 mL	00352312046105	Grey	No	
047	0990_QC300_20241017	HDPE (no PTFE)	20 mL	00352312046296	Grey	No	
048	0990_QC301_20241018	HDPE (no PTFE)	20 mL	00350822016532	Grey	No	
048	0990_QC301_20241018	HDPE (no PTFE)	20 mL	00350822016091	Grey	No	
049	0990_QC302_20241019	HDPE (no PTFE)	20 mL	00352309080051	Grey	No	
049	0990_QC302_20241019	HDPE (no PTFE)	20 mL	00352309079874	Grey	No	
050	0990_QC400_20241017	HDPE (no PTFE)	20 mL	00352312046278	Grey	No	
050	0990_QC400_20241017	HDPE (no PTFE)	20 mL	00352312045861	Grey	No	
051	0990_QC401_20241018	HDPE (no PTFE)	20 mL	00352309079866	Grey	No	
051	0990_QC401_20241018	HDPE (no PTFE)	20 mL	00352309079928	Grey	No	
052	0990_QC402_20241019	HDPE (no PTFE)	20 mL	00352309079845	Grey	No	
052	0990_QC402_20241019	HDPE (no PTFE)	20 mL	00352309080064	Grey	No	
053	0990_QC500_241021	HDPE (no PTFE)	20 mL	00352309087910	Grey	No	
053	0990_QC500_241021	HDPE (no PTFE)	20 mL	00352309087896	Grey	No	
054	0990_QC303_241020	HDPE (no PTFE)	20 mL	00352312046073	Grey	No	
054	0990_QC303_241020	HDPE (no PTFE)	20 mL	00352312045841	Grey	No	
055	0990_QC403_241020	HDPE (no PTFE)	20 mL	00352312045952	Grey	No	

ALSCompass SAMPLING Intelligence

ALS

ESky 2&4

ALS Use Only

Custody Document for Submissions via ALS Compass App

Project: 60676801 Client: DoD Project Manager [redacted]

Phone:

ALS Compass COC Reference: 73715 # Samples: 62 Sampler:

Phone:

Turnaround Requirements: Standard X Urgent

Special Instructions:	ALS Use Only			
0990_MW149_241019 = Please analyse, Samples provided	Custody seal intact?	YES	NO	N/A
	Free ice / frozen ice bricks upon receipt?	YES	NO	N/A
	Random sample temperature on receipt?	2.8	°C	

Custody:

Relinquished by:	Received by:	Relinquished by:	Received by:
[redacted]	[redacted]		[redacted]
Date / Time: 4.11	Date / Time: 04 NOV 2024 1130	Date / Time:	Date / Time: 5/11/24 12:30

CHAIN OF CUSTODY

COC#: 73719 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:
DATE TIME:	[redacted] DATE TIME: 07/11 1030	[redacted] DATE TIME: 5/11/24 12:30

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual SW

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE: [redacted]

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_SW161_221101		01/11/2024 11:00 AM	WATER	ALS: 2 Non ALS: 0	No	X		
002	0990_SW110_241030		30/10/2024 06:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		
003	0990_SW100_241030		30/10/2024 05:30 PM	WATER	ALS: 2 Non ALS: 0	No	X		
004	0990_SW108_241030		30/10/2024 05:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		
005	0990_SW153_241030		30/10/2024 05:20 PM	WATER	ALS: 2 Non ALS: 0	No	X		
006	0990_QC101_241101		04/11/2024 11:11 AM	WATER	ALS: 2 Non ALS: 0	No	X		
007	0990_QC201_241101	Send to ALS Brisbane	04/11/2024 11:12 AM	WATER	ALS: 2 Non ALS: 0	No	X		

Station / Forward [redacted]
Lab / Analysis: BC [redacted]
Organised By / Date [redacted]
Relinquished By / Date: 5/11/24
Courier / Carrier
WO No: ES2485723
Attach By PO / Forward Sheet

Environmental Division
Brisbane
Work Order Reference
EB2438417

[redacted]

CHAIN OF CUSTODY

COC#: 73719 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual SW

ORDER NO: 60676801/

PROJECT MANAGER [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE: / [redacted]

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
008	0990_QC301_241101	Rinsate	01/11/2024 04:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		
009	0990_QC401_241101	Field blank	01/11/2024 04:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		

CHAIN OF CUSTODY

COC#: 73719 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual SW

ORDER NO: 60676801/

PROJECT MANAGE[redacted]

PRIMARY SAMPLE[redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

EMAIL REPORTS TO:

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_SW161_221101	HDPE (no PTFE)	20 mL	00352309080037	Grey	No	
001	0990_SW161_221101	HDPE (no PTFE)	20 mL	00352309079924	Grey	No	
002	0990_SW110_241030	HDPE (no PTFE)	20 mL	00352312045871	Grey	No	
002	0990_SW110_241030	HDPE (no PTFE)	20 mL	00352312046143	Grey	No	
003	0990_SW100_241030	HDPE (no PTFE)	20 mL	00352312046309	Grey	No	
003	0990_SW100_241030	HDPE (no PTFE)	20 mL	00352312046081	Grey	No	
004	0990_SW108_241030	HDPE (no PTFE)	20 mL	00352312045919	Grey	No	
004	0990_SW108_241030	HDPE (no PTFE)	20 mL	00352312046116	Grey	No	
005	0990_SW153_241030	HDPE (no PTFE)	20 mL	00352312045772	Grey	No	
005	0990_SW153_241030	HDPE (no PTFE)	20 mL	00352312046221	Grey	No	
006	0990_QC101_241101	HDPE (no PTFE)	20 mL	00352312046310	Grey	No	
006	0990_QC101_241101	HDPE (no PTFE)	20 mL	00352312046313	Grey	No	
007	0990_QC201_241101	HDPE (no PTFE)	20 mL	00352312046274	Grey	No	
007	0990_QC201_241101	HDPE (no PTFE)	20 mL	00352312046321	Grey	No	
008	0990_QC301_241101	HDPE (no PTFE)	20 mL	00352312046086	Grey	No	
008	0990_QC301_241101	HDPE (no PTFE)	20 mL	00352312046339	Grey	No	
009	0990_QC401_241101	HDPE (no PTFE)	20 mL	00352312046100	Grey	No	
009	0990_QC401_241101	HDPE (no PTFE)	20 mL	00352312045806	Grey	No	

Total Bottle Count: ALS: 18, Non ALS: 0

ALSCompass SAMPLING Intelligence

ALS

ESKY 284

ALS Use Only

Custody Document for Submissions via ALS Compass App

Project: 60676801 Client: DoD Project Manager: [redacted]

Phone: ([redacted]

ALS Compass COC Reference: 73719 # Samples: 9 Sampler: [redacted]

Phone: ([redacted]

Turnaround Requirements: Standard X Urgent

Special Instructions:	ALS Use Only			
	Custody seal intact?	YES	NO	N/A
	Free ice / frozen ice bricks upon receipt?	YES	NO	N/A
	Random sample temperature on receipt?	9.3	°C	

Custody:

Relinquished by:		Relinquished by:	Received by:
[redacted]	[redacted]		[redacted]
Date / Time: 4.11	Date / Time: 04 NOV 2024	Date / Time:	Date / Time: 5/11/24 12:30

AECOM09/241031
NN

AECOM

 Chain of Custody

AECOM Australia Pty Ltd
[redacted]

Laboratory Details
Lab. Name: ALS
Lab. Address: [redacted]
Contact Name [redacted]
Lab. Ref:

Tel: [redacted]
Fax:
Preliminary Report by:
Final Report by:
Lab Quote No: SY/139/19 v5

Sampled By: Ian Dixon (ph: 0409 494 146) **Project Name:** NT_0990_PFASOMP_23 **AECOM Project #:** [redacted] **Purchase Order No:**

Due 7/11
DIOXINS 28/11

Specifications: Please report in ESdat format RE-FREEZE BIOTA SAMPLES

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr 5 days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: RE-FREEZE BIOTA SAMPLES)	Y

6. Report Format: ESdat 7. Project Manager:

RECEIVED 31 OCT 2024 BY: Frozen [redacted] 11:07am

Lab. ID	Sample ID	Sampling Date	Matrix: biota	Matrix: water	Matrix:	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: frozen	Container (No. & type)	HOLD											Notes
41	0990_QC156_241016	16 Oct 2024		X				X		Bottle	x											
42	0990_QC157_241015	15 Oct 2024	X						X	Snap bag	x											re-freeze when on hold
43	0990_QC158_241015	15 Oct 2024	X						X	Snap bag	x											re-freeze when on hold
44	0990_QC159_241015	15 Oct 2024	X						X	Snap bag	x											re-freeze when on hold
45	0990_QC160_241015	15 Oct 2024	X						X	Snap bag	x											re-freeze when on hold
46	0990_QC161_241016	16 Oct 2024	X						X	Snap bag	x											re-freeze when on hold
47	0990_QC162_241016	16 Oct 2024	X						X	Snap bag	x											re-freeze when on hold
48	0990_QC163_241016	16 Oct 2024	X						X	Snap bag	x											re-freeze when on hold
49	0990_QC164_241016	16 Oct 2024	X						X	Snap bag	x											re-freeze when on hold
N24/022155 57	0990_QC206_241016	16 Oct 2024		X				X		Bottle	x											Water - PLS FWD TO NMI
N24/022156 58	0990_QC207_241015	15 Oct 2024	X						X	Snap bag	x											Frozen biota - PLS FWD TO NMI
N24/022157 59	0990_QC208_241015	15 Oct 2024	X						X	Snap bag	x											Frozen biota - PLS FWD TO NMI
N24/022158 60	0990_QC209_241016	16 Oct 2024	X						X	Snap bag	x											Frozen biota - PLS FWD TO NMI
N24/022159 61	0990_QC210_241016	16 Oct 2024	X						X	Snap bag	x											Frozen biota - PLS FWD TO NMI

Comments: Please send ESdat files to DERP.labreports@esdat.com.au and ensure that the files use the PROJECT NAME
Temp. received: °C
Report & invoice: AP_CustomerServiceANZ@aecom.com
Lab Report No. Esky ID

Relinquished by: [redacted] Signed: Date: 21/10/2024 Relinquished by: Date:
Received by: [redacted] Signed: Date: Received by: Date:

AECOM

 Chain of Custody

AECOM Australia Pty Ltd
[redacted]

[redacted]

Laboratory Details
[redacted]
Lab. Ref:

Tel: [redacted]
Fax:
Preliminary Report by:
Final Report by:
[redacted]

Sampled By: Ian Dixon (ph: 0409 494 146) **Project Name:** NT_0990_PFASOMP_23 **AECOM Project #:** 60612561/3.1 **Purchase Order No:**

Specifications: Please report in ESdat format RE-FREEZE BIOTA SAMPLES

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr 5 days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: RE-FREEZE BIOTA SAMPLES)	Y

6. Report Format: ESdat 7. Project Manager:

Analysis Request

Lab. ID	Sample ID	Sampling Date	Matrix: biota	Matrix: water	Matrix:	Preservation: filt'ed	Preservation: acid	Preservation: ice	Preservation: frozen	Container (No. & type)	HOLD											Notes
50	0990_QC308_241017	17 Oct 2024		X				X		Bottle	x											
51	0990_QC309_241017	17 Oct 2024		X				X		Bottle	x											
52	0990_QC401_241015	15 Oct 2024		X				X		Bottle	x											
53	0990_QC402_241016	16 Oct 2024		X				X		Bottle	x											
54	0990_QC507_241017	17 Oct 2024		X				X		Bottle	x											
56	0990_QC508_241017	17 Oct 2024		X				X		Bottle	x											
56	0990_SW151_241016	16 Oct 2024		X				X		Bottle	x											
											x											
											x											
											x											
											x											
											x											
											x											
											x											

Comments: Please send ESdat files to DERP.labreports@esdat.com.au and ensure that the files use the PROJECT NAME

Temp. received: °C

Report & Invoice: AP_CustomerServiceANZ@aecom.com

Lab Report No. Esdy ID

Relinquished by: [redacted] Signed: Date: 21/10/2024 Relinquished by: Date:

Received by: [redacted] Signed: Date: Received by: Date:

25/10 1205

[redacted]

From:
Sent:
To:
Cc:
Subject:

[redacted]

OFFICIAL

CAUTION - This email originated from outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

[redacted]

Can we please have the following samples analysed?

0990_QC206_241016
0990_QC207_241015
0990_QC208_241015
0990_QC209_241016
0990_QC210_241016

Can I please also have the following Project name and cost code changed for this workorder?

Project ID: NT_0990_PFASOMP_24
Purchase order: 60676801/7.03.01

Please let me know if you need any additional information.

Kind regards

[redacted]

I acknowledge the Traditional Custodians of the country throughout Australia and pay my respect to them, their Culture and their Elders past, present and emerging.

0990_QC207_241015
0990_QC208_241015
0990_QC209_241016
0990_QC210_241016

Can I please also have the following Project name and cost code changed for this workorder?

Project ID: NT_0990_PFASOMP_24
Purchase order: 60676801/7.03.01

Please let me know if you need any additional information.

Kind regards

[redacted]

[redacted]

I acknowledge the Traditional Custodians of the country throughout Australia and pay my respect to them, their Culture and their Elders past, present and emerging.

Please consider the environment before printing this email.

[redacted]

Please hold for the time being. I want to just review what we have before releasing for analysis. We'll aim to get that finished by the end of the week.

Cheers,

[redacted]

[redacted]

From: [redacted]
Sent:
To:
Cc:
Subject:

OFFICIAL

CAUTION - This email originated from outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

[redacted]

Apologies, can we please get this analysed for the Full PFAS Suite.

Kind regards

[redacted]

I acknowledge the Traditional Custodians of the country throughout Australia and pay my respect to them, their Culture and their Elders past, present and emerging.

Please consider the environment before printing this email.

[redacted]

Hi [redacted]

Can we please have the following samples analysed?

0990_QC206_241016

[redacted]

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I acknowledge the Traditional Custodians of the country throughout Australia and pay my respect to them, their Culture and their Elders past, present and emerging.

Please consider the environment before printing this email.

[redacted]

OFFICIAL

[redacted]

Thank you for your recent sample submission and please see attached the COC we have received.

We have received some frozen biota that only has the instruction to "HOLD". Can you please let us know if you require tests done on these samples or if you would like us to freeze until confirmed?

AECOM

[redacted]

[redacted]

Sampled By: [redacted]

Project Name: NT_0990_PFASOMP_23

AECOM Project #: 60612561/3.1

Specifications: Please report in ESdat format

RE-FREEZE BIOTA SAMPLES

	Yes (tick)
1. Urgent TAT required? (please circle: 24hr 48hr 5 days)	
2. Fast TAT Guarantee Required?	
3. Is any sediment layer present in waters to be excluded from extractions?	
4. % extraneous material removed from samples to be reported as per NEPM 5.1.1?	
5. Special storage requirements? (details: RE-FREEZE BIOTA SAMPLES)	Y

6. Report Format: ESdat

7. Project Manager:

Lab. ID	Sample ID	Sampling Date	Matrix: tissue	Matrix: water	Matrix:	Preservation: filtered	Preservation: cold	Preservation: ice	Preservation: frozen	Container (no. & type)	PQL					
41	0990_QC156_241016	16 Oct 2024		X				X		Bottle	x					
42	0990_QC157_241015	15 Oct 2024	X						X	Snap bag	x					
43	0990_QC158_241015	15 Oct 2024	X						X	Snap bag	x					
44	0990_QC159_241015	15 Oct 2024	X						X	Snap bag	x					
45	0990_QC160_241015	15 Oct 2024	X						X	Snap bag	x					
46	0990_QC161_241016	16 Oct 2024	X						X	Snap bag	x					
47	0990_QC162_241016	16 Oct 2024	X						X	Snap bag	x					
48	0990_QC163_241016	16 Oct 2024	X						X	Snap bag	x					
49	0990_QC164_241016	16 Oct 2024	X						X	Snap bag	x					
~~50~~ 57	0990_QC206_241016	16 Oct 2024		X				X		Bottle	x					
~~51~~ 58	0990_QC207_241015	15 Oct 2024	X						X	Snap bag	x					
~~52~~ 59	0990_QC208_241015	15 Oct 2024	X						X	Snap bag	x					
~~53~~ 60	0990_QC209_241016	16 Oct 2024	X						X	Snap bag	x					
~~54~~ 61	0990_QC210_241016	16 Oct 2024	X						X	Snap bag	x					

Comments: Please send ESdat files to DERP.labreports@esdat.com.au and ensure that the files use the PROJECT NAME

Temp. received: °C

Report & Invoice: [redacted]

Relinquished by: [redacted] Signed: Date: 21/10/2024 Relinquished by:

Received by: Signed: Date: Received by:

DRAFT

Appendix F

Laboratory Reports

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2420210**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60612561/2.1	Quote number	: EP2023AECOMAU0010 (EN/004/23)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Katherine		
Sampler	: [redacted]		

Dates

Date Samples Received	: 21-Jun-2024 08:30	Issue Date	: 21-Jun-2024
Client Requested Due Date	: 28-Jun-2024	Scheduled Reporting Date	: **28-Jun-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 9.4°C 15.6°C 19.4°C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 6 / 6

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **(21/06/2024) This is an updated SRN which reflects a change in project reference and purchase order reference.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **QC Forward analysis will be conducted by NMI.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2420210-001	19-Jun-2024 00:00	0990_SW153_240619	✓
ES2420210-002	19-Jun-2024 00:00	0990_SW108_240619	✓
ES2420210-003	19-Jun-2024 00:00	0990_QC100_240619	✓
ES2420210-004	19-Jun-2024 00:00	0990_QC300_240619	✓
ES2420210-005	19-Jun-2024 00:00	0990_QC400_240619	✓
ES2420210-006	19-Jun-2024 00:00	0990_QC500_240619	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2420210**	Page	: 1 of 9
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 21-Jun-2024 08:30
Order number	: 60612561/2.1	Date Analysis Commenced	: 21-Jun-2024
C-O-C number	: ----	Issue Date	: 25-Jun-2024 14:18
Sampler	: [redacted]		
Site	: Katherine		
Quote number	: EN/004/23		
No. of samples received	: 6		
No. of samples analysed	: 6		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_SW153_240619	0990_SW108_240619	0990_QC100_240619	0990_QC300_240619	0990_QC400_240619
			Sampling date / time	19-Jun-2024 00:00	19-Jun-2024 00:00	19-Jun-2024 00:00	19-Jun-2024 00:00	19-Jun-2024 00:00
Compound	CAS Number	LOR	Unit	ES2420210-001	ES2420210-002	ES2420210-003	ES2420210-004	ES2420210-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.01**	**0.03**	**0.03**	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.02**	**0.04**	**0.05**	<0.01	<0.01
Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_SW153_240619	0990_SW108_240619	0990_QC100_240619	0990_QC300_240619	0990_QC400_240619
			Sampling date / time	19-Jun-2024 00:00	19-Jun-2024 00:00	19-Jun-2024 00:00	19-Jun-2024 00:00	19-Jun-2024 00:00
Compound	CAS Number	LOR	Unit	ES2420210-001	ES2420210-002	ES2420210-003	ES2420210-004	ES2420210-005
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.03**	**0.07**	**0.08**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.03**	**0.07**	**0.08**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.03**	**0.07**	**0.08**	<0.01	<0.01
EP231S: PFAS Surrogate								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_SW153_240619	0990_SW108_240619	0990_QC100_240619	0990_QC300_240619	0990_QC400_240619
			Sampling date / time	19-Jun-2024 00:00	19-Jun-2024 00:00	19-Jun-2024 00:00	19-Jun-2024 00:00	19-Jun-2024 00:00
Compound	CAS Number	LOR	Unit	ES2420210-001	ES2420210-002	ES2420210-003	ES2420210-004	ES2420210-005
				Result	Result	Result	Result	Result
EP231S: PFAS Surrogate - Continued								
13C4-PFOS	----	0.02	%	**103**	**102**	**101**	**101**	**101**
13C8-PFOA	----	0.02	%	**98.9**	**102**	**99.0**	**100**	**97.3**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC500_240619	----	----	----	----
			Sampling date / time	19-Jun-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2420210-006	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC500_240619	----	----	----	----
			Sampling date / time	19-Jun-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2420210-006	--------	--------	--------	--------
				Result	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC500_240619	----	----	----	----
			Sampling date / time	19-Jun-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2420210-006	--------	--------	--------	--------
				Result	----	----	----	----
EP231S: PFAS Surrogate - Continued								
13C4-PFOS	----	0.02	%	**100**	----	----	----	----
13C8-PFOA	----	0.02	%	**97.8**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2420210**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 21-Jun-2024
Order number	: 60612561/2.1	Date Analysis Commenced	: 21-Jun-2024
C-O-C number	: ----	Issue Date	: 25-Jun-2024
Sampler	: [redacted]		
Site	: Katherine		
Quote number	: EN/004/23		
No. of samples received	: 6		
No. of samples analysed	: 6		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5874365)								
EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	0.25 µg/L	94.7	70.0	130
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	86.6	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	100	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	85.8	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	95.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	91.3	65.0	140
EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	0.25 µg/L	92.8	70.0	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	91.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5874365)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	87.9	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.1	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	89.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	89.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	93.7	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	97.7	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	93.7	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.6	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	95.9	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.3	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	89.8	71.0	132
EP231X: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.05	µg/L	<0.05	0.25 µg/L	91.9	62.9	136
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5874365)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	97.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	95.5	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	92.7	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	102	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	92.8	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	84.6	65.0	136

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 5874365) - continued								
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	90.1	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5874365)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	86.2	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	101	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	114	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	95.8	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2420210**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 21-Jun-2024
Site	: Katherine	Issue Date	: 25-Jun-2024
Sampler	: [redacted]	No. of samples received	: 6
Order number	: 60612561/2.1	No. of samples analysed	: 6

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	17	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	17	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0990_SW153_240619,	0990_SW108_240619,	**19-Jun-2024**	**21-Jun-2024**	16-Dec-2024	✓	**25-Jun-2024**	16-Dec-2024	✓
0990_QC100_240619,	0990_QC300_240619,							
0990_QC400_240619,	0990_QC500_240619							
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0990_SW153_240619,	0990_SW108_240619,	**19-Jun-2024**	**21-Jun-2024**	16-Dec-2024	✓	**25-Jun-2024**	16-Dec-2024	✓
0990_QC100_240619,	0990_QC300_240619,							
0990_QC400_240619,	0990_QC500_240619							
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
0990_SW153_240619,	0990_SW108_240619,	**19-Jun-2024**	**21-Jun-2024**	16-Dec-2024	✓	**25-Jun-2024**	16-Dec-2024	✓
0990_QC100_240619,	0990_QC300_240619,							
0990_QC400_240619,	0990_QC500_240619							
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0990_SW153_240619,	0990_SW108_240619,	**19-Jun-2024**	**21-Jun-2024**	16-Dec-2024	✓	**25-Jun-2024**	16-Dec-2024	✓
0990_QC100_240619,	0990_QC300_240619,							
0990_QC400_240619,	0990_QC500_240619							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X)							
0990_SW153_240619, 0990_SW108_240619, 0990_QC100_240619, 0990_QC300_240619, 0990_QC400_240619, 0990_QC500_240619	**19-Jun-2024**	**21-Jun-2024**	16-Dec-2024	✓	**25-Jun-2024**	16-Dec-2024	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	17	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	17	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2435721**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted] NSW Australia 2164
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73697	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT114		
Sampler	: [redacted]		

Dates

Date Samples Received	: 05-Nov-2024 11:00	Issue Date	: 05-Nov-2024
Client Requested Due Date	: 11-Nov-2024	Scheduled Reporting Date	: **11-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 9.3'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2435721-001	30-Oct-2024 10:30	0990_POT114_241030	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

QUALITY CONTROL REPORT

Work Order	: **ES2435721**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	[redacted]	Contact	[redacted]
Address	[redacted]	Address	[redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 06-Nov-2024
C-O-C number	: 73697	Issue Date	: 10-Nov-2024
Sampler	[redacted]		
Site	: POT114		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6167405)									
ES2435541-107	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2435541-108	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6167405)									
ES2435541-107	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6167405) - continued									
ES2435541-107	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2435541-108	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6167405)									
ES2435541-107	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2435541-108	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6167405)									
ES2435541-107	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2435541-108	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6167405)									
ES2435541-107	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2435541-108	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6167405)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	77.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	91.5	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	81.7	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	101	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	87.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.5	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6167405)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	84.5	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.3	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	79.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	84.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	87.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	95.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	91.2	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.0	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.5	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	102	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6167405)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	88.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	99.5	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	83.8	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.6	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	100	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	104	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	90.6	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6167405)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6167405) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	89.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	79.2	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	83.2	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	77.1	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6167405)							
ES2435541-107	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	76.5	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	90.1	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	80.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	102	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	87.7	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	77.3	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6167405)							
ES2435541-107	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	83.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	90.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	84.4	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	84.8	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	86.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	96.3	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	96.2	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84.0	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	98.5	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	90.6	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	96.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6167405)							
ES2435541-107	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	89.2	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	96.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	91.3	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	89.2	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6167405) - continued							
ES2435541-107	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	96.0	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	99.6	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6167405)							
ES2435541-107	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	76.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	75.9	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	78.5	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	76.6	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2435721**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	[redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024
Site	: POT114	Issue Date	: 10-Nov-2024
Sampler	[redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT114_241030	**30-Oct-2024**	**06-Nov-2024**	28-Apr-2025	✓	**07-Nov-2024**	28-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT114_241030	**30-Oct-2024**	**06-Nov-2024**	28-Apr-2025	✓	**07-Nov-2024**	28-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT114_241030	**30-Oct-2024**	**06-Nov-2024**	28-Apr-2025	✓	**07-Nov-2024**	28-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT114_241030	**30-Oct-2024**	**06-Nov-2024**	28-Apr-2025	✓	**07-Nov-2024**	28-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT114_241030	**30-Oct-2024**	**06-Nov-2024**	28-Apr-2025	✓	**07-Nov-2024**	28-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2435724**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 74961	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT111		
Sampler	: [redacted]		

Dates

Date Samples Received	: 05-Nov-2024 11:00	Issue Date	: 05-Nov-2024
Client Requested Due Date	: 11-Nov-2024	Scheduled Reporting Date	: **11-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 10.7'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2435724-001	30-Oct-2024 11:00	0990_POT111_241030	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2435724**	Page	: 1 of 5
Client	: [redacted]	Laboratory	: [redacted]
Contact	:	Contact	: [redacted]
Address	:	Address	:
Telephone	: —	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 06-Nov-2024
C-O-C number	: 74961	Issue Date	: 11-Nov-2024 14:33
Sampler	: [redacted]		
Site	: POT111		
Quote number	: —		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_POT111_241030	—	—	—	—
			Sampling date / time	30-Oct-2024 11:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2435724-001	------	------	------	------
				Result	—	—	—	—
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0990_POT111_241030	—	—	—	—
				Sampling date / time	30-Oct-2024 11:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2435724-001	------	------	------	------
					Result	—	—	—	—
EP231C: Perfluoroalkyl Sulfonamides - Continued									
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L		<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L		<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L		<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L		<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L		<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids									
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L		<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L		<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L		<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L		<0.05	----	----	----	----
EP231P: PFAS Sums									
Sum of PFAS	----	0.01	µg/L		<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L		<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L		<0.01	----	----	----	----
EP231S: PFAS Surrogate									
13C4-PFOS	----	0.02	%		**93.7**	----	----	----	----
13C8-PFOA	----	0.02	%		**91.7**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	**----**	60	120
13C8-PFOA	**----**	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2435724**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 06-Nov-2024
C-O-C number	: 74961	Issue Date	: 11-Nov-2024
Sampler	: [redacted]		
Site	: POT111		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6168076)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	82.1	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	98.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	88.7	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	91.7	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	78.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6168076)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	94.6	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	98.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.0	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	104	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	109	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6168076)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	91.9	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	119	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	104	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	105	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	112	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	82.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6168076)								

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6168076) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	90.7	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	99.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	114	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	101	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2435724**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024
Site	: POT111	Issue Date	: 11-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT111_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT111_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT111_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT111_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT111_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2435725**
Amendment : **1**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 74969	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: QC PP October		
Sampler	: [redacted]		

Dates

Date Samples Received	: 05-Nov-2024 11:00	Issue Date	: 18-Nov-2024
Client Requested Due Date	: 11-Nov-2024	Scheduled Reporting Date	: **11-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 9.2'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 3 / 3

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **18/11/2024: This is an updated SRN reflecting a change the sampling date/time for sample ES2435725-001.**
- **Sample 0990_QC200_241030 has been forwarded to ALS Brisbane.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2435725-001	30-Oct-2024 09:30	0990_QC100_241030	✓
ES2435725-003	30-Oct-2024 14:30	0990_QC300_241030	✓
ES2435725-004	30-Oct-2024 14:30	0990_QC400_241030	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2435725**	Page	: 1 of 5
Amendment	: **1**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 06-Nov-2024
C-O-C number	: 74969	Issue Date	: 18-Nov-2024 10:52
Sampler	: [redacted]		
Site	: QC PP October		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (18/11/2024): This report has been amended to change the sampling date/time for sample ES2435725-001. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC100_241030	0990_QC300_241030	0990_QC400_241030	----	----
			Sampling date / time	30-Oct-2024 09:30	30-Oct-2024 14:30	30-Oct-2024 14:30	----	----
Compound	CAS Number	LOR	Unit	ES2435725-001	ES2435725-003	ES2435725-004	--------	--------
				Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC100_241030	0990_QC300_241030	0990_QC400_241030	----	----
			Sampling date / time	30-Oct-2024 09:30	30-Oct-2024 14:30	30-Oct-2024 14:30	----	----
Compound	CAS Number	LOR	Unit	ES2435725-001	ES2435725-003	ES2435725-004	--------	--------
				Result	Result	Result	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**99.2**	**97.6**	**97.4**	----	----
13C8-PFOA	----	0.02	%	**92.3**	**94.0**	**91.9**	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2435725**	Page	: 1 of 4
Amendment	: **1**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	[redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: + [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 06-Nov-2024
C-O-C number	: 74969	Issue Date	: 18-Nov-2024
Sampler	: [redacted]		
Site	: QC PP October		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6168076)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	82.1	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	98.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	88.7	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	91.7	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	78.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6168076)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	94.6	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	98.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.0	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	104	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	109	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6168076)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	91.9	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	119	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	104	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	105	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	112	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	82.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6168076)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6168076) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	90.7	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	99.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	114	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	101	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2435725**	Page	: 1 of 4
Amendment	: **1**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024
Site	: QC PP October	Issue Date	: 18-Nov-2024
Sampler	: [redacted]	No. of samples received	: 3
Order number	: 60676801/	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X) 0990_QC100_241030, 0990_QC400_241030	0990_QC300_241030,	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X) 0990_QC100_241030, 0990_QC400_241030	0990_QC300_241030,	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X) 0990_QC100_241030, 0990_QC400_241030	0990_QC300_241030,	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X) 0990_QC100_241030, 0990_QC400_241030	0990_QC300_241030,	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X) 0990_QC100_241030, 0990_QC400_241030	0990_QC300_241030,	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2435728**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	[redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 74974	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: OTH114		
Sampler	: [redacted]		

Dates

Date Samples Received	: 05-Nov-2024 11:00	Issue Date	: 05-Nov-2024
Client Requested Due Date	: 11-Nov-2024	Scheduled Reporting Date	: **11-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 2.1'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2435728-001	30-Oct-2024 12:30	0990_OTH114_241030	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2435728**	Page	: 1 of 5
Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	:	Contact	: [redacted]
Address	:	Address	:
Telephone	: —	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 06-Nov-2024
C-O-C number	: 74974	Issue Date	: 11-Nov-2024 14:34
Sampler	: [redacted]		
Site	: OTH114		
Quote number	: —		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0990_OTH114_241030	—	—	—	—
				Sampling date / time	30-Oct-2024 12:30	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2435728-001	------	------	------	------
					Result	—	—	—	—
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.05**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.08**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_OTH114_241030	—	—	—	—
			Sampling date / time	30-Oct-2024 12:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2435728-001	------	------	------	------
				Result	—	—	—	—
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	**0.08**	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.21**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.13**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.21**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**97.5**	----	----	----	----
13C8-PFOA	----	0.02	%	**95.3**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	**----**	60	120
13C8-PFOA	**----**	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2435728**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	[redacted]
Contact	[redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 06-Nov-2024
C-O-C number	: 74974	Issue Date	: 11-Nov-2024
Sampler	: [redacted]		
Site	: OTH114		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6168076)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	82.1	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	98.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	88.7	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	91.7	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	78.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6168076)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	94.6	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	98.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.0	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	104	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	109	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6168076)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	91.9	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	119	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	104	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	105	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	112	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	82.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6168076)								

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6168076) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	90.7	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	99.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	114	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	101	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2435728**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024
Site	: OTH114	Issue Date	: 11-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH114_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH114_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_OTH114_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH114_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_OTH114_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2435729**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 74975	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: oth115		
Sampler	: [redacted]		

Dates

Date Samples Received	: 05-Nov-2024 11:00	Issue Date	: 05-Nov-2024
Client Requested Due Date	: 11-Nov-2024	Scheduled Reporting Date	: **11-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 2.7'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2435729-001	30-Oct-2024 13:20	0990_OTH115_241030	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2435729**	Page	: 1 of 5
Client	: [redacted]	Laboratory	: [redacted]
Contact	:	Contact	: [redacted]
Address	:	Address	:
Telephone	: —	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 06-Nov-2024
C-O-C number	: 74975	Issue Date	: 11-Nov-2024 14:33
Sampler	: [redacted]		
Site	: oth115		
Quote number	: —		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)				Sample ID	0990_OTH115_241030	—	—	—	—
				Sampling date / time	30-Oct-2024 13:20	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2435729-001	------	------	------	------
					Result	—	—	—	—
EP231A: Perfluoroalkyl Sulfonic Acids									
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L		<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L		**0.09**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L		**0.12**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L		<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids									
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L		<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L		<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L		<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L		<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L		<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L		<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L		<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L		<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L		<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides									
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L		<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_OTH115_241030	—	—	—	—
			Sampling date / time	30-Oct-2024 13:20	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2435729-001	------	------	------	------
				Result	—	—	—	—
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.21**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.21**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.21**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**91.1**	----	----	----	----
13C8-PFOA	----	0.02	%	**94.2**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	**----**	60	120
13C8-PFOA	**----**	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2435729**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 06-Nov-2024
C-O-C number	: 74975	Issue Date	: 11-Nov-2024
Sampler	: [redacted]		
Site	: oth115		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6168076)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	82.1	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	98.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	88.7	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	91.7	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	78.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6168076)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	94.6	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	98.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.0	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	104	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	109	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6168076)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	91.9	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	119	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	104	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	105	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	112	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	82.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6168076)								

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6168076) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	90.7	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	99.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	114	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	101	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2435729**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	[redacted]	[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024
Site	: oth115	Issue Date	: 11-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH115_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH115_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_OTH115_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH115_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_OTH115_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2435730**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 74976	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: OTH120		
Sampler	: [redacted]		

Dates

Date Samples Received	: 05-Nov-2024 11:00	Issue Date	: 05-Nov-2024
Client Requested Due Date	: 11-Nov-2024	Scheduled Reporting Date	: **11-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 8.2'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2435730-001	30-Oct-2024 12:00	0990_OTH120_241030	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2435730**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	:
Address	:	Address	:
Telephone	:	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 06-Nov-2024
C-O-C number	: 74976	Issue Date	: 11-Nov-2024 14:35
Sampler	[redacted]		
Site	: OTH120		
Quote number	: —		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_OTH120_241030	—	—	—	—
			Sampling date / time	30-Oct-2024 12:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2435730-001	------	------	------	------
				Result	—	—	—	—
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_OTH120_241030	—	—	—	—
			Sampling date / time	30-Oct-2024 12:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2435730-001	------	------	------	------
				Result	—	—	—	—
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	102	----	----	----	----
13C8-PFOA	----	0.02	%	94.6	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	**----**	60	120
13C8-PFOA	**----**	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2435730**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
[redacted]	[redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 06-Nov-2024
C-O-C number	: 74976	Issue Date	: 11-Nov-2024
Sampler	: [redacted]		
Site	: OTH120		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6168076)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	82.1	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	98.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	88.7	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	91.7	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	78.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6168076)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	94.6	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	98.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.0	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	104	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	109	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6168076)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	91.9	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	119	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	104	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	105	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	112	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	82.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6168076)								

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6168076) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	90.7	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	99.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	114	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	101	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2435730**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024
Site	: OTH120	Issue Date	: 11-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH120_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH120_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_OTH120_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH120_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_OTH120_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2435779**
Amendment : **2**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	[redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: + [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 4
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73714	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Biannual GW October		
Sampler	: [redacted]		

Dates

Date Samples Received	: 05-Nov-2024 11:00	Issue Date	: 20-Nov-2024
Client Requested Due Date	: 11-Nov-2024	Scheduled Reporting Date	: **11-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 2.8'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 57 / 57

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **08/11/2024: This is an updated SRN reflecting the removal of the sample description for samples ES2435779-047 - 053.**
- **15/11/2024: This is an updated SRN reflecting the change to the sample IDs for samples ES2435779-002, 003, 004 and 006.**
- **20/11/2024: This is an updated SRN reflecting an update to the sample ID for all ES2435779 samples.**
- **Samples 0990_QC203_20241021, 0990_QC200_20241017, 0990_QC201_20241018 and 0990_QC202_20241019 have been forwarded to ALS Brisbane.**
- **Sample 0990_MW149_202410 was not received/sampled.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2435779-001	22-Oct-2024 12:40	0990_MW285_241022	✓
ES2435779-002	19-Oct-2024 15:00	0990_MW400_241019	✓
ES2435779-003	17-Oct-2024 17:10	0990_MW403_241017	✓
ES2435779-004	18-Oct-2024 16:24	0990_OTH111_241018	✓
ES2435779-005	23-Oct-2024 13:41	0990_OTH112_241023	✓
ES2435779-006	18-Oct-2024 14:55	0990_MW118I_241018	✓
ES2435779-007	18-Oct-2024 15:15	0990_MW118D_241018	✓
ES2435779-008	18-Oct-2024 14:15	0990_MW130_241018	✓
ES2435779-009	18-Oct-2024 15:55	0990_MW131_241018	✓
ES2435779-010	18-Oct-2024 08:55	0990_MW106_241018	✓
ES2435779-011	18-Oct-2024 08:30	0990_MW801S_241018	✓
ES2435779-012	18-Oct-2024 09:40	0990_MW109_241018	✓
ES2435779-013	18-Oct-2024 10:10	0990_MW109D_241018	✓
ES2435779-014	18-Oct-2024 10:50	0990_MW111S_241018	✓
ES2435779-015	18-Oct-2024 11:10	0990_MW111D_241018	✓
ES2435779-016	19-Oct-2024 10:00	0990_MW146_241019	✓
ES2435779-017	19-Oct-2024 08:40	0990_MW802S_241019	✓
ES2435779-018	19-Oct-2024 09:20	0990_MW802I_241019	✓
ES2435779-019	19-Oct-2024 09:30	0990_MW802D_241019	✓
ES2435779-021	17-Oct-2024 14:45	0990_MW803S_241017	✓
ES2435779-022	17-Oct-2024 14:45	0990_MW803I_241017	✓
ES2435779-023	17-Oct-2024 15:15	0990_MW803D_241017	✓
ES2435779-024	20-Oct-2024 11:00	0990_MW136_241020	✓
ES2435779-025	18-Oct-2024 09:20	0990_MW107_241018	✓
ES2435779-026	17-Oct-2024 14:15	0990_MW104_241017	✓
ES2435779-027	18-Oct-2024 10:30	0990_MW110_241018	✓
ES2435779-028	19-Oct-2024 10:30	0990_MW127_241018	✓
ES2435779-029	19-Oct-2024 08:40	0990_MW129_241019	✓
ES2435779-030	21-Oct-2024 09:30	0990_MW135_241021	✓
ES2435779-031	20-Oct-2024 12:00	0990_MW137_241020	✓
ES2435779-032	01-Nov-2024 15:30	0990_MW140_241101	✓
ES2435779-033	19-Oct-2024 16:00	0990_MW142_241019	✓
ES2435779-034	19-Oct-2024 16:30	0990_MW144_241019	✓
ES2435779-035	19-Oct-2024 08:20	0990_MW149_241019	✓
ES2435779-036	20-Oct-2024 13:30	0990_MW231_241020	✓

			WATER - EP231X PFAS - Full Suite (31 analytes)
ES2435779-037	21-Oct-2024 08:00	0990_MW244_241021	✓
ES2435779-038	22-Oct-2024 12:10	0990_MW278_241022	✓
ES2435779-039	17-Oct-2024 18:34	0990_QC100_241017	✓
ES2435779-040	19-Oct-2024 11:59	0990_QC101_241018	✓
ES2435779-041	19-Oct-2024 02:55	0990_QC102_241019	✓
ES2435779-042	21-Oct-2024 18:25	0990_QC103_241021	✓
ES2435779-047	17-Oct-2024 18:37	0990_QC300_241017	✓
ES2435779-048	19-Oct-2024 12:31	0990_QC301_241018	✓
ES2435779-049	19-Oct-2024 12:29	0990_QC302_241019	✓
ES2435779-050	17-Oct-2024 18:37	0990_QC400_241017	✓
ES2435779-051	19-Oct-2024 12:29	0990_QC401_241018	✓
ES2435779-052	19-Oct-2024 12:30	0990_QC402_241019	✓
ES2435779-053	21-Oct-2024 18:28	0990_QC500_241021	✓
ES2435779-054	20-Oct-2024 10:45	0990_QC303_241020	✓
ES2435779-055	20-Oct-2024 10:47	0990_QC403_241020	✓
ES2435779-056	21-Oct-2024 08:54	0990_QC304_241021	✓
ES2435779-057	21-Oct-2024 08:55	0990_QC404_241021	✓
ES2435779-058	22-Oct-2024 15:12	0990_QC305_241022	✓
ES2435779-059	22-Oct-2024 15:12	0990_QC405_241022	✓
ES2435779-060	28-Oct-2024 13:35	0990_QC406_241023	✓
ES2435779-061	28-Oct-2024 13:36	0990_QC306_241023	✓
ES2435779-062	01-Nov-2024 08:30	0990_MW133_241101	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2435779**	Page	: 1 of 27
Amendment	: [redacted]		
Client	: [redacted]	Laboratory	: [redacted]
Contact	: [redacted]	Contact	[redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----		
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 06-Nov-2024
C-O-C number	: 73714	Issue Date	: 20-Nov-2024 09:35
Sampler	: [redacted]		
Site	: Biannual GW October		
Quote number	: ----		
No. of samples received	: 57		
No. of samples analysed	: 57		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X: Surrogates could not be determined due to samples being diluted outside of analytical range
- Amendment (15/11/2024): This report has been amended as a result of a request to change sample identification numbers (IDs) received from [redacted] on 15/11/2024, for samples ES2435779-002, 003, 004 and 006. All analysis results are as per the previous report.
- Amendment (20/11/2024): This report has been amended as a result of a request to change sample identification numbers (IDs) received from [redacted] on 15/11/2024, for all ES2435779 samples. All analysis results are as per the previous report.
- EP231X: Particular samples required dilution due to the presence of high level contaminants. LOR values have been adjusted accordingly.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_MW285_241022	0990_MW400_241019	0990_MW403_241017	0990_OTH111_241018	0990_OTH112_241023
			Sampling date / time	22-Oct-2024 12:40	19-Oct-2024 15:00	17-Oct-2024 17:10	18-Oct-2024 16:24	23-Oct-2024 13:41
Compound	CAS Number	LOR	Unit	ES2435779-001	ES2435779-002	ES2435779-003	ES2435779-004	ES2435779-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**0.03**	**0.09**	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**0.03**	**0.12**	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.25**	**0.70**	**0.09**	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	**0.07**	**0.02**	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.20**	**1.51**	**1.25**	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	**0.03**	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	**0.11**	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	**0.04**	**0.01**	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_MW285_241022	0990_MW400_241019	0990_MW403_241017	0990_OTH111_241018	0990_OTH112_241023
			Sampling date / time	22-Oct-2024 12:40	19-Oct-2024 15:00	17-Oct-2024 17:10	18-Oct-2024 16:24	23-Oct-2024 13:41
Compound	CAS Number	LOR	Unit	ES2435779-001	ES2435779-002	ES2435779-003	ES2435779-004	ES2435779-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	**0.12**	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.51**	**2.83**	**1.37**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.45**	**2.21**	**1.34**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.48**	**2.60**	**1.35**	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**97.0**	**104**	**87.1**	**99.7**	**98.4**
13C8-PFOA	----	0.02	%	**94.3**	**96.6**	**93.8**	**91.8**	**98.5**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_MW118I_241018	0990_MW118D_241018	0990_MW130_241018	0990_MW131_241018	0990_MW106_241018
			Sampling date / time	18-Oct-2024 14:55	18-Oct-2024 15:15	18-Oct-2024 14:15	18-Oct-2024 15:55	18-Oct-2024 08:55
Compound	CAS Number	LOR	Unit	ES2435779-006	ES2435779-007	ES2435779-008	ES2435779-009	ES2435779-010
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**0.11**	**0.09**	<0.02	<0.02	**0.07**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**0.13**	**0.11**	<0.02	<0.02	**0.07**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.82**	**0.72**	**0.03**	**0.02**	**0.38**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	**0.07**	**0.06**	<0.02	<0.02	**0.04**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**1.62**	**1.47**	**0.02**	**0.01**	**0.65**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	**0.04**	**0.05**	<0.02	<0.02	**0.03**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**0.16**	**0.14**	<0.02	<0.02	**0.12**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	**0.04**	**0.02**	<0.02	<0.02	**0.02**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**0.06**	**0.05**	<0.01	<0.01	**0.04**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_MW118I_241018	0990_MW118D_241018	0990_MW130_241018	0990_MW131_241018	0990_MW106_241018
			Sampling date / time	18-Oct-2024 14:55	18-Oct-2024 15:15	18-Oct-2024 14:15	18-Oct-2024 15:55	18-Oct-2024 08:55
Compound	CAS Number	LOR	Unit	ES2435779-006	ES2435779-007	ES2435779-008	ES2435779-009	ES2435779-010
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	**0.06**	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**3.09**	**2.81**	**0.05**	**0.03**	**1.45**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**2.44**	**2.19**	**0.05**	**0.03**	**1.03**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**2.85**	**2.60**	**0.05**	**0.03**	**1.31**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**104**	**93.8**	**97.1**	**95.1**	**95.5**
13C8-PFOA	----	0.02	%	**96.4**	**90.9**	**92.5**	**96.0**	**95.9**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_MW801S_241018	0990_MW109_241018	0990_MW109D_241018	0990_MW111S_241018	0990_MW111D_241018
			Sampling date / time	18-Oct-2024 08:30	18-Oct-2024 09:40	18-Oct-2024 10:10	18-Oct-2024 10:50	18-Oct-2024 11:10
Compound	CAS Number	LOR	Unit	ES2435779-011	ES2435779-012	ES2435779-013	ES2435779-014	ES2435779-015
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**0.03**	**0.15**	**0.08**	**0.16**	**0.16**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**0.02**	**0.08**	**0.08**	**0.23**	**0.18**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.15**	**0.57**	**0.56**	**1.42**	**1.05**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	**0.04**	**0.04**	**0.08**	**0.11**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.39**	**1.23**	**1.19**	**1.85**	**2.60**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	**0.02**	**0.03**	**0.05**	**0.05**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**0.03**	**0.13**	**0.13**	**0.31**	**0.25**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	**0.02**	**0.02**	**0.05**	**0.04**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**0.01**	**0.04**	**0.04**	**0.10**	**0.09**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_MW801S_241018	0990_MW109_241018	0990_MW109D_241018	0990_MW111S_241018	0990_MW111D_241018
			Sampling date / time	18-Oct-2024 08:30	18-Oct-2024 09:40	18-Oct-2024 10:10	18-Oct-2024 10:50	18-Oct-2024 11:10
Compound	CAS Number	LOR	Unit	ES2435779-011	ES2435779-012	ES2435779-013	ES2435779-014	ES2435779-015
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.63**	**2.30**	**2.20**	**4.32**	**4.59**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.54**	**1.80**	**1.75**	**3.27**	**3.65**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.61**	**2.16**	**2.05**	**3.94**	**4.24**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**97.0**	**84.8**	**88.8**	**94.3**	**89.8**
13C8-PFOA	----	0.02	%	**90.4**	**87.0**	**93.1**	**92.6**	**87.9**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_MW146_241019	0990_MW802S_241019	0990_MW802I_241019	0990_MW802D_241019	0990_MW803S_241017
			Sampling date / time	19-Oct-2024 10:00	19-Oct-2024 08:40	19-Oct-2024 09:20	19-Oct-2024 09:30	17-Oct-2024 14:45
Compound	CAS Number	LOR	Unit	ES2435779-016	ES2435779-017	ES2435779-018	ES2435779-019	ES2435779-021
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**3.72**	**2.13**	**3.52**	**0.22**	**44.3**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**3.52**	**2.45**	**3.41**	**0.27**	**42.6**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**23.4**	**6.30**	**19.1**	**1.24**	**194**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	**1.32**	**0.25**	**1.63**	**0.13**	**21.8**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**47.8**	**2.61**	**57.4**	**2.87**	**157**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.10	<0.02	<0.10	<0.02	<0.10
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	**1.3**	**0.8**	**1.7**	**0.2**	**13.4**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	**1.49**	**0.68**	**1.96**	**0.14**	**27.9**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**6.75**	**2.40**	**8.83**	**0.67**	**136**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	**0.79**	**0.32**	**1.73**	**0.13**	**31.0**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**1.69**	**0.34**	**3.04**	**0.22**	**50.0**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.10	<0.02	<0.10	<0.02	**0.76**
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.10	<0.02	<0.10	<0.02	<0.10
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.10	<0.02	<0.10	<0.02	<0.10
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.10	<0.02	<0.10	<0.02	<0.10
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.10	<0.02	<0.10	<0.02	<0.10
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.25	<0.05	<0.25	<0.05	<0.25
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	**0.14**	<0.02	**0.20**	<0.02	<0.10
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.25	<0.05	<0.25	<0.05	<0.25

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_MW146_241019	0990_MW802S_241019	0990_MW802I_241019	0990_MW802D_241019	0990_MW803S_241017
			Sampling date / time	19-Oct-2024 10:00	19-Oct-2024 08:40	19-Oct-2024 09:20	19-Oct-2024 09:30	17-Oct-2024 14:45
Compound	CAS Number	LOR	Unit	ES2435779-016	ES2435779-017	ES2435779-018	ES2435779-019	ES2435779-021
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.25	<0.05	<0.25	<0.05	<0.25
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.25	<0.05	<0.25	<0.05	<0.25
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.25	<0.05	<0.25	<0.05	<0.25
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.10	<0.02	<0.10	<0.02	<0.10
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.10	<0.02	<0.10	<0.02	<0.10
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.10	<0.05	<0.10	<0.05	<0.10
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.10	<0.05	**0.15**	**0.10**	**2.49**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.10	<0.05	<0.10	<0.05	<0.10
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.10	<0.05	<0.10	<0.05	<0.10
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**93.8**	**19.0**	**104**	**6.27**	**740**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**71.2**	**8.91**	**76.5**	**4.11**	**351**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**86.9**	**15.6**	**97.4**	**5.79**	**656**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**93.3**	**87.8**	**79.0**	**94.6**	**93.8**
13C8-PFOA	----	0.02	%	**94.3**	**90.3**	**88.8**	**87.1**	**101**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_MW803I_241017	0990_MW803D_241017	0990_MW136_241020	0990_MW107_241018	0990_MW104_241017
			Sampling date / time	17-Oct-2024 14:45	17-Oct-2024 15:15	20-Oct-2024 11:00	18-Oct-2024 09:20	17-Oct-2024 14:15
Compound	CAS Number	LOR	Unit	ES2435779-022	ES2435779-023	ES2435779-024	ES2435779-025	ES2435779-026
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**11.7**	**40.6**	<0.02	**0.02**	**3.12**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**9.30**	**27.6**	<0.02	**0.03**	**2.64**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**37.9**	**154**	<0.01	**0.19**	**14.4**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	**3.57**	**20.3**	<0.02	<0.02	**1.73**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**40.8**	**8020**	**0.05**	**0.41**	**53.9**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.10	<0.50	<0.02	<0.02	<0.05
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	**4.1**	**21.2**	<0.1	<0.1	**1.2**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	**4.94**	**21.0**	<0.02	<0.02	**1.52**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**22.8**	**81.8**	<0.02	<0.02	**7.87**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	**3.86**	**16.2**	<0.02	<0.02	**1.13**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**5.09**	**28.8**	<0.01	**0.01**	**2.96**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	**0.11**	**3.00**	<0.02	<0.02	**0.07**
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.10	<0.50	<0.02	<0.02	<0.05
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.10	<0.50	<0.02	<0.02	<0.05
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.10	<0.50	<0.02	<0.02	<0.05
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.10	<0.50	<0.02	<0.02	<0.05
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.25	<1.25	<0.05	<0.05	<0.12
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.10	<0.50	<0.02	<0.02	<0.05
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.25	<1.25	<0.05	<0.05	<0.12

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_MW803I_241017	0990_MW803D_241017	0990_MW136_241020	0990_MW107_241018	0990_MW104_241017
			Sampling date / time	17-Oct-2024 14:45	17-Oct-2024 15:15	20-Oct-2024 11:00	18-Oct-2024 09:20	17-Oct-2024 14:15
Compound	CAS Number	LOR	Unit	ES2435779-022	ES2435779-023	ES2435779-024	ES2435779-025	ES2435779-026
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.25	<1.25	<0.05	<0.05	<0.12
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.25	<1.25	<0.05	<0.05	<0.12
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.25	<1.25	<0.05	<0.05	<0.12
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.10	<0.50	<0.02	<0.02	<0.05
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.10	<0.50	<0.02	<0.02	<0.05
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.10	<0.50	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	**0.50**	<0.50	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.10	<0.50	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.10	<0.50	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**150**	**8460**	**0.05**	**0.66**	**91.8**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**78.7**	**8170**	**0.05**	**0.60**	**68.3**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**132**	**8380**	**0.05**	**0.63**	**86.1**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**90.2**	**Not Determined**	**99.0**	**98.3**	**82.7**
13C8-PFOA	----	0.02	%	**97.2**	**Not Determined**	**104**	**101**	**82.6**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_MW110_241018	0990_MW127_241018	0990_MW129_241019	0990_MW135_241021	0990_MW137_241020
			Sampling date / time	18-Oct-2024 10:30	19-Oct-2024 10:30	19-Oct-2024 08:40	21-Oct-2024 09:30	20-Oct-2024 12:00
Compound	CAS Number	LOR	Unit	ES2435779-027	ES2435779-028	ES2435779-029	ES2435779-030	ES2435779-031
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**0.17**	**0.14**	**63.6**	**0.02**	**0.03**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**0.20**	**0.18**	**54.0**	<0.02	**0.03**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**1.30**	**1.11**	**134**	**0.08**	**0.16**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	**0.09**	**0.07**	**13.6**	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**2.93**	**2.34**	**192**	**0.12**	**0.19**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.50	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	**45.6**	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	**0.07**	**0.08**	**65.6**	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**0.28**	**0.28**	**219**	**0.04**	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	**0.04**	**0.04**	**66.4**	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**0.11**	**0.08**	**56.2**	**0.01**	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.50	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.50	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.50	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.50	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.50	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<1.25	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.50	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<1.25	<0.05	<0.05

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_MW110_241018	0990_MW127_241018	0990_MW129_241019	0990_MW135_241021	0990_MW137_241020
			Sampling date / time	18-Oct-2024 10:30	19-Oct-2024 10:30	19-Oct-2024 08:40	21-Oct-2024 09:30	20-Oct-2024 12:00
Compound	CAS Number	LOR	Unit	ES2435779-027	ES2435779-028	ES2435779-029	ES2435779-030	ES2435779-031
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<1.25	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<1.25	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<1.25	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.50	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.50	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.50	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	**2.05**	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.50	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.50	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**5.26**	**4.38**	**930**	**0.27**	**0.41**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**4.23**	**3.45**	**326**	**0.20**	**0.35**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**4.90**	**4.07**	**844**	**0.27**	**0.38**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**100**	**97.2**	**Not Determined**	**96.9**	**102**
13C8-PFOA	----	0.02	%	**101**	**104**	**Not Determined**	**104**	**113**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_MW140_241101	0990_MW142_241019	0990_MW144_241019	0990_MW149_241019	0990_MW231_241020
			Sampling date / time	01-Nov-2024 15:30	19-Oct-2024 16:00	19-Oct-2024 16:30	19-Oct-2024 08:20	20-Oct-2024 13:30
Compound	CAS Number	LOR	Unit	ES2435779-032	ES2435779-033	ES2435779-034	ES2435779-035	ES2435779-036
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	**13.6**	**116**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	**15.7**	**97.2**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.13**	**0.02**	<0.01	**70.8**	**389**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	**8.08**	**42.9**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.17**	**0.02**	<0.01	**181**	**338**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	**0.11**	<0.50
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	**3.9**	**47.5**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	**4.79**	**81.9**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	**20.4**	**372**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	**3.01**	**81.5**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	**6.22**	**108**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	**0.13**	**3.13**
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.05	<0.50
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.05	<0.50
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.05	<0.50
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.05	<0.50
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.12	<1.25
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	**0.32**	<0.50
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.12	<1.25

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_MW140_241101	0990_MW142_241019	0990_MW144_241019	0990_MW149_241019	0990_MW231_241020
			Sampling date / time	01-Nov-2024 15:30	19-Oct-2024 16:00	19-Oct-2024 16:30	19-Oct-2024 08:20	20-Oct-2024 13:30
Compound	CAS Number	LOR	Unit	ES2435779-032	ES2435779-033	ES2435779-034	ES2435779-035	ES2435779-036
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.12	<1.25
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.12	<1.25
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.12	<1.25
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.05	<0.50
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.05	<0.50
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.50
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	**10.4**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	**1.22**
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.50
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.30**	**0.04**	<0.01	**336**	**1730**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.30**	**0.04**	<0.01	**252**	**727**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.30**	**0.04**	<0.01	**304**	**1540**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**102**	**97.6**	**105**	**82.2**	**Not Determined**
13C8-PFOA	----	0.02	%	**98.8**	**97.1**	**99.7**	**93.8**	**Not Determined**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_MW244_241021	0990_MW278_241022	0990_QC100_241017	0990_QC101_241018	0990_QC102_241019
			Sampling date / time	21-Oct-2024 08:00	22-Oct-2024 12:10	17-Oct-2024 18:34	19-Oct-2024 11:59	19-Oct-2024 02:55
Compound	CAS Number	LOR	Unit	ES2435779-037	ES2435779-038	ES2435779-039	ES2435779-040	ES2435779-041
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**0.31**	**0.36**	**42.3**	**0.17**	**1.68**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**0.55**	**0.43**	**28.3**	**0.20**	**2.07**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**3.72**	**3.94**	**164**	**1.31**	**4.46**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	**0.25**	**0.28**	**20.4**	**0.09**	**0.19**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**5.64**	**7.66**	**7780**	**2.80**	**2.16**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.50	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	**0.3**	**0.2**	**21.4**	<0.1	**0.6**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	**0.71**	**0.09**	**19.8**	**0.07**	**0.55**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**1.00**	**0.42**	**88.8**	**0.30**	**1.88**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	**1.04**	**0.06**	**16.1**	**0.04**	**0.24**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**0.69**	**0.20**	**30.7**	**0.10**	**0.28**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	**0.03**	<0.02	**3.12**	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.50	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.50	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.50	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.50	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<1.25	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.50	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<1.25	<0.05	<0.05

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_MW244_241021	0990_MW278_241022	0990_QC100_241017	0990_QC101_241018	0990_QC102_241019
			Sampling date / time	21-Oct-2024 08:00	22-Oct-2024 12:10	17-Oct-2024 18:34	19-Oct-2024 11:59	19-Oct-2024 02:55
Compound	CAS Number	LOR	Unit	ES2435779-037	ES2435779-038	ES2435779-039	ES2435779-040	ES2435779-041
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<1.25	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<1.25	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<1.25	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.50	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.50	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.50	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	**3.79**	<0.05	**1.00**	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.50	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.50	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**18.1**	**13.8**	**8240**	**5.15**	**14.7**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**9.36**	**11.6**	**7940**	**4.11**	**6.62**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**17.2**	**12.9**	**8160**	**4.79**	**11.8**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**100**	**96.2**	**Not Determined**	**104**	**90.3**
13C8-PFOA	----	0.02	%	**98.0**	**98.0**	**Not Determined**	**95.3**	**92.6**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_QC103_241021	0990_QC303_241020	0990_QC403_241020	0990_QC304_241021	0990_QC404_241021
			Sampling date / time	21-Oct-2024 18:25	20-Oct-2024 10:45	20-Oct-2024 10:47	21-Oct-2024 08:54	21-Oct-2024 08:55
Compound	CAS Number	LOR	Unit	ES2435779-042	ES2435779-054	ES2435779-055	ES2435779-056	ES2435779-057
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**0.02**	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.09**	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.19**	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**0.05**	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**0.02**	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_QC103_241021	0990_QC303_241020	0990_QC403_241020	0990_QC304_241021	0990_QC404_241021
			Sampling date / time	21-Oct-2024 18:25	20-Oct-2024 10:45	20-Oct-2024 10:47	21-Oct-2024 08:54	21-Oct-2024 08:55
Compound	CAS Number	LOR	Unit	ES2435779-042	ES2435779-054	ES2435779-055	ES2435779-056	ES2435779-057
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.37**	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.28**	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.37**	<0.01	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**97.2**	**98.1**	**93.6**	**96.6**	**98.6**
13C8-PFOA	----	0.02	%	**107**	**103**	**105**	**101**	**103**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_QC405_241022	0990_MW133_241101	----	----	----
			Sampling date / time	22-Oct-2024 15:12	01-Nov-2024 08:30	----	----	----
Compound	CAS Number	LOR	Unit	ES2435779-059	ES2435779-062	--------	--------	--------
				Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	**0.02**	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	**0.01**	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_QC405_241022	0990_MW133_241101	----	----	----
			Sampling date / time	22-Oct-2024 15:12	01-Nov-2024 08:30	----	----	----
Compound	CAS Number	LOR	Unit	ES2435779-059	ES2435779-062	--------	--------	--------
				Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	**0.03**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	**0.03**	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	**0.03**	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**103**	**102**	----	----	----
13C8-PFOA	----	0.02	%	**106**	**103**	----	----	----

Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)			Sample ID	0990_QC300_241017	0990_QC301_241018	0990_QC302_241019	0990_QC305_241022	0990_QC306_241023
			Sampling date / time	17-Oct-2024 18:37	19-Oct-2024 12:31	19-Oct-2024 12:29	22-Oct-2024 15:12	28-Oct-2024 13:36
Compound	CAS Number	LOR	Unit	ES2435779-047	ES2435779-048	ES2435779-049	ES2435779-058	ES2435779-061
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)			Sample ID	0990_QC300_241017	0990_QC301_241018	0990_QC302_241019	0990_QC305_241022	0990_QC306_241023
			Sampling date / time	17-Oct-2024 18:37	19-Oct-2024 12:31	19-Oct-2024 12:29	22-Oct-2024 15:12	28-Oct-2024 13:36
Compound	CAS Number	LOR	Unit	ES2435779-047	ES2435779-048	ES2435779-049	ES2435779-058	ES2435779-061
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**94.9**	**100**	**95.5**	**95.0**	**102**
13C8-PFOA	----	0.02	%	**102**	**104**	**102**	**101**	**108**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC400_241017	0990_QC401_241018	0990_QC402_241019	0990_QC500_241021	0990_QC406_241023
			Sampling date / time	17-Oct-2024 18:37	19-Oct-2024 12:29	19-Oct-2024 12:30	21-Oct-2024 18:28	28-Oct-2024 13:35
Compound	CAS Number	LOR	Unit	ES2435779-050	ES2435779-051	ES2435779-052	ES2435779-053	ES2435779-060
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC400_241017	0990_QC401_241018	0990_QC402_241019	0990_QC500_241021	0990_QC406_241023
			Sampling date / time	17-Oct-2024 18:37	19-Oct-2024 12:29	19-Oct-2024 12:30	21-Oct-2024 18:28	28-Oct-2024 13:35
Compound	CAS Number	LOR	Unit	ES2435779-050	ES2435779-051	ES2435779-052	ES2435779-053	ES2435779-060
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**98.6**	**105**	**94.0**	**98.1**	**95.7**
13C8-PFOA	----	0.02	%	**105**	**106**	**101**	**106**	**108**

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: RINSATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2435779**	Page	: 1 of 7
Amendment	: **2**		
Client	[redacted]	Laboratory	[redacted]
Contact	[redacted]	Contact	[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 06-Nov-2024
C-O-C number	: 73714	Issue Date	: 20-Nov-2024
Sampler	: [redacted]		
Site	: Biannual GW October		
Quote number	: ----		
No. of samples received	: 57		
No. of samples analysed	: 57		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6168076)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	82.1	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	98.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	88.7	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	91.7	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	78.8	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6168086)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	96.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	107	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	93.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.1	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	91.9	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	95.4	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6169980)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	89.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	105	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	85.7	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	85.8	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	87.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	79.1	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6170016)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	83.6	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	84.0	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	86.2	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	114	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	104	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	92.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6168076)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	94.6	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	98.8	72.0	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6168076) - continued								
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.0	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	104	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	109	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6168086)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.3	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	85.3	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	100	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	101	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	116	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	102	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	109	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	113	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	121	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	120	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6169980)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	86.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	77.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	87.3	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	91.0	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	87.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	98.9	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	91.1	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	95.5	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	95.0	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6170016)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6170016) - continued								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	100	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	100	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	96.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	94.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	101	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	102	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	92.7	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	97.4	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	100	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	96.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	100	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6168076)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	91.9	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	119	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	104	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	105	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	112	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	82.8	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6168086)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	95.3	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	123	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	115	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	106	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	102	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	94.3	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	100	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6169980)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6169980) - continued								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	80.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	115	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	109	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.9	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	85.5	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	90.1	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	81.8	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6170016)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	102	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	121	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	108	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	108	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	98.1	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	94.1	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6168076)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	90.7	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	99.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	114	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	101	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6168086)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	83.0	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	93.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	112	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	92.4	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6169980)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	63.6	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	83.2	64.0	140

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6169980) - continued								
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	89.9	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	95.7	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6170016)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	84.0	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	106	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	112	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	93.3	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2435779**	Page	: 1 of 13
Amendment	: **2**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	[redacted]	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024
Site	: Biannual GW October	Issue Date	: 20-Nov-2024
Sampler	: [redacted]	No. of samples received	: 57
Order number	: 60676801/	No. of samples analysed	: 57

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	74	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	74	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X) 0990_MW140_241101		**01-Nov-2024**	**07-Nov-2024**	30-Apr-2025	✓	**08-Nov-2024**	30-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW133_241101		**01-Nov-2024**	**08-Nov-2024**	30-Apr-2025	✓	**11-Nov-2024**	30-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW803D_241017, 0990_QC100_241017	0990_MW104_241017,	**17-Oct-2024**	**07-Nov-2024**	15-Apr-2025	✓	**11-Nov-2024**	15-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW403_241017, 0990_MW803I_241017, 0990_QC400_241017	0990_MW803S_241017, 0990_QC300_241017,	**17-Oct-2024**	**08-Nov-2024**	15-Apr-2025	✓	**11-Nov-2024**	15-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW107_241018,	0990_MW110_241018	**18-Oct-2024**	**07-Nov-2024**	16-Apr-2025	✓	**08-Nov-2024**	16-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_OTH111_241018, 0990_MW118D_241018, 0990_MW131_241018, 0990_MW801S_241018, 0990_MW109D_241018, 0990_MW111D_241018	0990_MW118I_241018, 0990_MW130_241018, 0990_MW106_241018, 0990_MW109_241018, 0990_MW111S_241018,	**18-Oct-2024**	**08-Nov-2024**	16-Apr-2025	✓	**11-Nov-2024**	16-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW127_241018, 0990_MW144_241019, 0990_QC102_241019	0990_MW142_241019, 0990_QC101_241018,	**19-Oct-2024**	**07-Nov-2024**	17-Apr-2025	✓	**08-Nov-2024**	17-Apr-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
HDPE (no PTFE) (EP231X) 0990_MW129_241019,	0990_MW149_241019	**19-Oct-2024**	**07-Nov-2024**	17-Apr-2025	✓	**11-Nov-2024**	17-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW400_241019, 0990_MW802S_241019, 0990_MW802D_241019, 0990_QC302_241019, 0990_QC402_241019	0990_MW146_241019, 0990_MW802I_241019, 0990_QC301_241018, 0990_QC401_241018,	**19-Oct-2024**	**08-Nov-2024**	17-Apr-2025	✓	**11-Nov-2024**	17-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW136_241020,	0990_MW137_241020	**20-Oct-2024**	**07-Nov-2024**	18-Apr-2025	✓	**08-Nov-2024**	18-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW231_241020		**20-Oct-2024**	**07-Nov-2024**	18-Apr-2025	✓	**11-Nov-2024**	18-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC303_241020,	0990_QC403_241020	**20-Oct-2024**	**08-Nov-2024**	18-Apr-2025	✓	**11-Nov-2024**	18-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW135_241021,	0990_MW244_241021	**21-Oct-2024**	**07-Nov-2024**	19-Apr-2025	✓	**08-Nov-2024**	19-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC103_241021, 0990_QC304_241021,	0990_QC500_241021, 0990_QC404_241021	**21-Oct-2024**	**08-Nov-2024**	19-Apr-2025	✓	**11-Nov-2024**	19-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW278_241022		**22-Oct-2024**	**07-Nov-2024**	20-Apr-2025	✓	**08-Nov-2024**	20-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW285_241022, 0990_QC405_241022	0990_QC305_241022,	**22-Oct-2024**	**08-Nov-2024**	20-Apr-2025	✓	**11-Nov-2024**	20-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_OTH112_241023		**23-Oct-2024**	**08-Nov-2024**	21-Apr-2025	✓	**11-Nov-2024**	21-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC406_241023,	0990_QC306_241023	**28-Oct-2024**	**08-Nov-2024**	26-Apr-2025	✓	**11-Nov-2024**	26-Apr-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_MW140_241101	**01-Nov-2024**	**07-Nov-2024**	30-Apr-2025	✓	**08-Nov-2024**	30-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW133_241101	**01-Nov-2024**	**08-Nov-2024**	30-Apr-2025	✓	**11-Nov-2024**	30-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW803D_241017, 0990_MW104_241017, 0990_QC100_241017	**17-Oct-2024**	**07-Nov-2024**	15-Apr-2025	✓	**11-Nov-2024**	15-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW403_241017, 0990_MW803S_241017, 0990_MW803I_241017, 0990_QC300_241017, 0990_QC400_241017	**17-Oct-2024**	**08-Nov-2024**	15-Apr-2025	✓	**11-Nov-2024**	15-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW107_241018, 0990_MW110_241018	**18-Oct-2024**	**07-Nov-2024**	16-Apr-2025	✓	**08-Nov-2024**	16-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_OTH111_241018, 0990_MW118I_241018, 0990_MW118D_241018, 0990_MW130_241018, 0990_MW131_241018, 0990_MW106_241018, 0990_MW801S_241018, 0990_MW109_241018, 0990_MW109D_241018, 0990_MW111S_241018, 0990_MW111D_241018	**18-Oct-2024**	**08-Nov-2024**	16-Apr-2025	✓	**11-Nov-2024**	16-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW127_241018, 0990_MW142_241019, 0990_MW144_241019, 0990_QC101_241018, 0990_QC102_241019	**19-Oct-2024**	**07-Nov-2024**	17-Apr-2025	✓	**08-Nov-2024**	17-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW129_241019, 0990_MW149_241019	**19-Oct-2024**	**07-Nov-2024**	17-Apr-2025	✓	**11-Nov-2024**	17-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW400_241019, 0990_MW146_241019, 0990_MW802S_241019, 0990_MW802I_241019, 0990_MW802D_241019, 0990_QC301_241018, 0990_QC302_241019, 0990_QC401_241018, 0990_QC402_241019	**19-Oct-2024**	**08-Nov-2024**	17-Apr-2025	✓	**11-Nov-2024**	17-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW136_241020, 0990_MW137_241020	**20-Oct-2024**	**07-Nov-2024**	18-Apr-2025	✓	**08-Nov-2024**	18-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW231_241020	**20-Oct-2024**	**07-Nov-2024**	18-Apr-2025	✓	**11-Nov-2024**	18-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC303_241020, 0990_QC403_241020	**20-Oct-2024**	**08-Nov-2024**	18-Apr-2025	✓	**11-Nov-2024**	18-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW135_241021, 0990_MW244_241021	**21-Oct-2024**	**07-Nov-2024**	19-Apr-2025	✓	**08-Nov-2024**	19-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC103_241021, 0990_QC500_241021, 0990_QC304_241021, 0990_QC404_241021	**21-Oct-2024**	**08-Nov-2024**	19-Apr-2025	✓	**11-Nov-2024**	19-Apr-2025	✓
HDPE (no PTFE) (EP231X)							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids - Continued							
0990_MW278_241022	**22-Oct-2024**	**07-Nov-2024**	20-Apr-2025	✓	**08-Nov-2024**	20-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW285_241022, 0990_QC305_241022, 0990_QC405_241022	**22-Oct-2024**	**08-Nov-2024**	20-Apr-2025	✓	**11-Nov-2024**	20-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_OTH112_241023	**23-Oct-2024**	**08-Nov-2024**	21-Apr-2025	✓	**11-Nov-2024**	21-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC406_241023, 0990_QC306_241023	**28-Oct-2024**	**08-Nov-2024**	26-Apr-2025	✓	**11-Nov-2024**	26-Apr-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X) 0990_MW140_241101		**01-Nov-2024**	**07-Nov-2024**	30-Apr-2025	✓	**08-Nov-2024**	30-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW133_241101		**01-Nov-2024**	**08-Nov-2024**	30-Apr-2025	✓	**11-Nov-2024**	30-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW803D_241017, 0990_QC100_241017	0990_MW104_241017,	**17-Oct-2024**	**07-Nov-2024**	15-Apr-2025	✓	**11-Nov-2024**	15-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW403_241017, 0990_MW803I_241017, 0990_QC400_241017	0990_MW803S_241017, 0990_QC300_241017,	**17-Oct-2024**	**08-Nov-2024**	15-Apr-2025	✓	**11-Nov-2024**	15-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW107_241018,	0990_MW110_241018	**18-Oct-2024**	**07-Nov-2024**	16-Apr-2025	✓	**08-Nov-2024**	16-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_OTH111_241018, 0990_MW118D_241018, 0990_MW131_241018, 0990_MW801S_241018, 0990_MW109D_241018, 0990_MW111D_241018	0990_MW118I_241018, 0990_MW130_241018, 0990_MW106_241018, 0990_MW109_241018, 0990_MW111S_241018,	**18-Oct-2024**	**08-Nov-2024**	16-Apr-2025	✓	**11-Nov-2024**	16-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW127_241018, 0990_MW144_241019, 0990_QC102_241019	0990_MW142_241019, 0990_QC101_241018,	**19-Oct-2024**	**07-Nov-2024**	17-Apr-2025	✓	**08-Nov-2024**	17-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW129_241019,	0990_MW149_241019	**19-Oct-2024**	**07-Nov-2024**	17-Apr-2025	✓	**11-Nov-2024**	17-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW400_241019, 0990_MW802S_241019, 0990_MW802D_241019, 0990_QC302_241019, 0990_QC402_241019	0990_MW146_241019, 0990_MW802I_241019, 0990_QC301_241018, 0990_QC401_241018,	**19-Oct-2024**	**08-Nov-2024**	17-Apr-2025	✓	**11-Nov-2024**	17-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW136_241020,	0990_MW137_241020	**20-Oct-2024**	**07-Nov-2024**	18-Apr-2025	✓	**08-Nov-2024**	18-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW231_241020		**20-Oct-2024**	**07-Nov-2024**	18-Apr-2025	✓	**11-Nov-2024**	18-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC303_241020,	0990_QC403_241020	**20-Oct-2024**	**08-Nov-2024**	18-Apr-2025	✓	**11-Nov-2024**	18-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW135_241021,	0990_MW244_241021	**21-Oct-2024**	**07-Nov-2024**	19-Apr-2025	✓	**08-Nov-2024**	19-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC103_241021, 0990_QC304_241021,	0990_QC500_241021, 0990_QC404_241021	**21-Oct-2024**	**08-Nov-2024**	19-Apr-2025	✓	**11-Nov-2024**	19-Apr-2025	✓
HDPE (no PTFE) (EP231X)								

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides - Continued							
0990_MW278_241022	**22-Oct-2024**	**07-Nov-2024**	20-Apr-2025	✓	**08-Nov-2024**	20-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW285_241022, 0990_QC305_241022, 0990_QC405_241022	**22-Oct-2024**	**08-Nov-2024**	20-Apr-2025	✓	**11-Nov-2024**	20-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_OTH112_241023	**23-Oct-2024**	**08-Nov-2024**	21-Apr-2025	✓	**11-Nov-2024**	21-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC406_241023, 0990_QC306_241023	**28-Oct-2024**	**08-Nov-2024**	26-Apr-2025	✓	**11-Nov-2024**	26-Apr-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_MW140_241101	**01-Nov-2024**	**07-Nov-2024**	30-Apr-2025	✓	**08-Nov-2024**	30-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW133_241101	**01-Nov-2024**	**08-Nov-2024**	30-Apr-2025	✓	**11-Nov-2024**	30-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW803D_241017, 0990_MW104_241017, 0990_QC100_241017	**17-Oct-2024**	**07-Nov-2024**	15-Apr-2025	✓	**11-Nov-2024**	15-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW403_241017, 0990_MW803S_241017, 0990_MW803I_241017, 0990_QC300_241017, 0990_QC400_241017	**17-Oct-2024**	**08-Nov-2024**	15-Apr-2025	✓	**11-Nov-2024**	15-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW107_241018, 0990_MW110_241018	**18-Oct-2024**	**07-Nov-2024**	16-Apr-2025	✓	**08-Nov-2024**	16-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_OTH111_241018, 0990_MW118I_241018, 0990_MW118D_241018, 0990_MW130_241018, 0990_MW131_241018, 0990_MW106_241018, 0990_MW801S_241018, 0990_MW109_241018, 0990_MW109D_241018, 0990_MW111S_241018, 0990_MW111D_241018	**18-Oct-2024**	**08-Nov-2024**	16-Apr-2025	✓	**11-Nov-2024**	16-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW127_241018, 0990_MW142_241019, 0990_MW144_241019, 0990_QC101_241018, 0990_QC102_241019	**19-Oct-2024**	**07-Nov-2024**	17-Apr-2025	✓	**08-Nov-2024**	17-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW129_241019, 0990_MW149_241019	**19-Oct-2024**	**07-Nov-2024**	17-Apr-2025	✓	**11-Nov-2024**	17-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW400_241019, 0990_MW146_241019, 0990_MW802S_241019, 0990_MW802I_241019, 0990_MW802D_241019, 0990_QC301_241018, 0990_QC302_241019, 0990_QC401_241018, 0990_QC402_241019	**19-Oct-2024**	**08-Nov-2024**	17-Apr-2025	✓	**11-Nov-2024**	17-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW136_241020, 0990_MW137_241020	**20-Oct-2024**	**07-Nov-2024**	18-Apr-2025	✓	**08-Nov-2024**	18-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW231_241020	**20-Oct-2024**	**07-Nov-2024**	18-Apr-2025	✓	**11-Nov-2024**	18-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC303_241020, 0990_QC403_241020	**20-Oct-2024**	**08-Nov-2024**	18-Apr-2025	✓	**11-Nov-2024**	18-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW135_241021, 0990_MW244_241021	**21-Oct-2024**	**07-Nov-2024**	19-Apr-2025	✓	**08-Nov-2024**	19-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC103_241021, 0990_QC500_241021, 0990_QC304_241021, 0990_QC404_241021	**21-Oct-2024**	**08-Nov-2024**	19-Apr-2025	✓	**11-Nov-2024**	19-Apr-2025	✓
HDPE (no PTFE) (EP231X)							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued							
0990_MW278_241022	**22-Oct-2024**	**07-Nov-2024**	20-Apr-2025	✓	**08-Nov-2024**	20-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW285_241022, 0990_QC305_241022, 0990_QC405_241022	**22-Oct-2024**	**08-Nov-2024**	20-Apr-2025	✓	**11-Nov-2024**	20-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_OTH112_241023	**23-Oct-2024**	**08-Nov-2024**	21-Apr-2025	✓	**11-Nov-2024**	21-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC406_241023, 0990_QC306_241023	**28-Oct-2024**	**08-Nov-2024**	26-Apr-2025	✓	**11-Nov-2024**	26-Apr-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_MW140_241101	**01-Nov-2024**	**07-Nov-2024**	30-Apr-2025	✓	**08-Nov-2024**	30-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW133_241101	**01-Nov-2024**	**08-Nov-2024**	30-Apr-2025	✓	**11-Nov-2024**	30-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW803D_241017, 0990_MW104_241017, 0990_QC100_241017	**17-Oct-2024**	**07-Nov-2024**	15-Apr-2025	✓	**11-Nov-2024**	15-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW403_241017, 0990_MW803S_241017, 0990_MW803I_241017, 0990_QC300_241017, 0990_QC400_241017	**17-Oct-2024**	**08-Nov-2024**	15-Apr-2025	✓	**11-Nov-2024**	15-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW107_241018, 0990_MW110_241018	**18-Oct-2024**	**07-Nov-2024**	16-Apr-2025	✓	**08-Nov-2024**	16-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_OTH111_241018, 0990_MW118I_241018, 0990_MW118D_241018, 0990_MW130_241018, 0990_MW131_241018, 0990_MW106_241018, 0990_MW801S_241018, 0990_MW109_241018, 0990_MW109D_241018, 0990_MW111S_241018, 0990_MW111D_241018	**18-Oct-2024**	**08-Nov-2024**	16-Apr-2025	✓	**11-Nov-2024**	16-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW127_241018, 0990_MW142_241019, 0990_MW144_241019, 0990_QC101_241018, 0990_QC102_241019	**19-Oct-2024**	**07-Nov-2024**	17-Apr-2025	✓	**08-Nov-2024**	17-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW129_241019, 0990_MW149_241019	**19-Oct-2024**	**07-Nov-2024**	17-Apr-2025	✓	**11-Nov-2024**	17-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW400_241019, 0990_MW146_241019, 0990_MW802S_241019, 0990_MW802I_241019, 0990_MW802D_241019, 0990_QC301_241018, 0990_QC302_241019, 0990_QC401_241018, 0990_QC402_241019	**19-Oct-2024**	**08-Nov-2024**	17-Apr-2025	✓	**11-Nov-2024**	17-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW136_241020, 0990_MW137_241020	**20-Oct-2024**	**07-Nov-2024**	18-Apr-2025	✓	**08-Nov-2024**	18-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW231_241020	**20-Oct-2024**	**07-Nov-2024**	18-Apr-2025	✓	**11-Nov-2024**	18-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC303_241020, 0990_QC403_241020	**20-Oct-2024**	**08-Nov-2024**	18-Apr-2025	✓	**11-Nov-2024**	18-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW135_241021, 0990_MW244_241021	**21-Oct-2024**	**07-Nov-2024**	19-Apr-2025	✓	**08-Nov-2024**	19-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC103_241021, 0990_QC500_241021, 0990_QC304_241021, 0990_QC404_241021	**21-Oct-2024**	**08-Nov-2024**	19-Apr-2025	✓	**11-Nov-2024**	19-Apr-2025	✓
HDPE (no PTFE) (EP231X)							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums - Continued							
0990_MW278_241022	**22-Oct-2024**	**07-Nov-2024**	20-Apr-2025	✓	**08-Nov-2024**	20-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW285_241022, 0990_QC305_241022, 0990_QC405_241022	**22-Oct-2024**	**08-Nov-2024**	20-Apr-2025	✓	**11-Nov-2024**	20-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_OTH112_241023	**23-Oct-2024**	**08-Nov-2024**	21-Apr-2025	✓	**11-Nov-2024**	21-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC406_241023, 0990_QC306_241023	**28-Oct-2024**	**08-Nov-2024**	26-Apr-2025	✓	**11-Nov-2024**	26-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	74	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	74	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	74	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	74	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2440429**

Client	: [redacted]	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASMGMT_24	Page	: 1 of 3
Order number	: 60676801/2.b	Quote number	: EP2023AECOMAU0010 (EN/004/23)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [redacted]		

Dates

Date Samples Received	: 12-Dec-2024 11:30	Issue Date	: 12-Dec-2024
Client Requested Due Date	: 19-Dec-2024	Scheduled Reporting Date	: **19-Dec-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 18.5'C 23.7'C 22.4'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 5 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	(On Hold) WATER No analysis requested	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2440429-001	09-Dec-2024 00:00	0990_MW403_241209		✓
ES2440429-002	09-Dec-2024 00:00	0990_QC110_241209	✓	
ES2440429-003	09-Dec-2024 00:00	0990_QC210_241209	✓	
ES2440429-004	09-Dec-2024 00:00	0990_QC310_241209	✓	
ES2440429-005	09-Dec-2024 00:00	0990_QC410_241209	✓	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2440429**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Project	: NT_0990_PFASMGMT_24	Date Samples Received	: 12-Dec-2024 11:30
Order number	: 60676801/2.b	Date Analysis Commenced	: 13-Dec-2024
C-O-C number	: ----	Issue Date	: 19-Dec-2024 13:59
Sampler	: [redacted]		
Site	: ----		
Quote number	: EN/004/23		
No. of samples received	: 5		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X: PFAS results for sample ES2440429-001 confirmed by re-extraction and re-analysis.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW403_241209	----	----	----	----
			Sampling date / time	09-Dec-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2440429-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	----	----	----	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.02**	----	----	----	----
Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW403_241209	----	----	----	----
			Sampling date / time	09-Dec-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2440429-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.02**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.02**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.02**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**111**	----	----	----	----
13C8-PFOA	----	0.02	%	**106**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2440429**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	[redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Project	: NT_0990_PFASMGMT_24	Date Samples Received	: 12-Dec-2024
Order number	: 60676801/2.b	Date Analysis Commenced	: 13-Dec-2024
C-O-C number	: ----	Issue Date	: 19-Dec-2024
Sampler	: [redacted]		
Site	: ----		
Quote number	: EN/004/23		
No. of samples received	: 5		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6259469)								
EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	0.25 µg/L	103	70.0	130
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	89.5	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	93.0	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	102	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	121	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	103	65.0	140
EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	0.25 µg/L	108	70.0	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	93.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6259469)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	106	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	97.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	90.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	100	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	93.1	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	93.1	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	100	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	94.5	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	102	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6259469)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	102	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	83.8	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	104	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	99.6	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	104	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	95.6	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	92.6	61.0	135

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6259469)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	79.3	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	102	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	94.0	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	88.1	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2440429**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	[redacted]	: [redacted]
Project	: NT_0990_PFASMGMT_24	Date Samples Received	: 12-Dec-2024
Site	: ----	Issue Date	: 19-Dec-2024
Sampler	: [redacted]	No. of samples received	: 5
Order number	: 60676801/2.b	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	15	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	15	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_MW403_241209	**09-Dec-2024**	**16-Dec-2024**	07-Jun-2025	✓	**19-Dec-2024**	07-Jun-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_MW403_241209	**09-Dec-2024**	**16-Dec-2024**	07-Jun-2025	✓	**19-Dec-2024**	07-Jun-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_MW403_241209	**09-Dec-2024**	**16-Dec-2024**	07-Jun-2025	✓	**19-Dec-2024**	07-Jun-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_MW403_241209	**09-Dec-2024**	**16-Dec-2024**	07-Jun-2025	✓	**19-Dec-2024**	07-Jun-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_MW403_241209	**09-Dec-2024**	**16-Dec-2024**	07-Jun-2025	✓	**19-Dec-2024**	07-Jun-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	15	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	15	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB2438420**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	[redacted]
Contact	: [redacted]	Contact	[redacted]
[redacted]	: [redacted]		
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	:
Facsimile	: ----	Facsimile	:
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 74969	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: QC PP October		
Sampler	: [redacted]		

Dates

Date Samples Received	: 07-Nov-2024 10:30	Issue Date	: 07-Nov-2024
Client Requested Due Date	: 14-Nov-2024	Scheduled Reporting Date	: **14-Nov-2024**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 12.2°C, 14.5°C, 21.6°C - Ice present
Receipt Detail	: ESKY LARGE	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Unless otherwise stated, analytical work for this work order will be conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818.
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
EB2438420-001	04-Nov-2024 12:28	0990_QC200_241030	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **EB2438420**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 07-Nov-2024 10:30
Order number	: 60676801/	Date Analysis Commenced	: 08-Nov-2024
C-O-C number	: 74969	Issue Date	: 14-Nov-2024 15:43
Sampler	: [redacted]		
Site	: QC PP October		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC200_241030	----	----	----	----
			Sampling date / time	04-Nov-2024 12:28	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2438420-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC200_241030	----	----	----	----
			Sampling date / time	04-Nov-2024 12:28	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2438420-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**104**	----	----	----	----
13C8-PFOA	----	0.02	%	**104**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EB2438420**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	[redacted]
Contact	: [redacted]	Contact	[redacted]
[redacted]	: [redacted]		
[redacted]	: ----	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 07-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 08-Nov-2024
C-O-C number	: 74969	Issue Date	: 14-Nov-2024
Sampler	: [redacted]		
Site	: QC PP October		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6179772)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	74.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	77.0	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	70.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	78.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	72.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	75.3	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6179772)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	73.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	74.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	75.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	74.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	72.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	74.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	72.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	69.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	72.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	76.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	86.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6179772)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	67.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	68.8	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	64.3	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	68.5	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	64.9	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	70.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	78.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6179772)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6179772) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	65.3	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.2378 µg/L	71.1	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	82.3	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.241 µg/L	64.5	64.2	133

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2438420**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 07-Nov-2024
Site	: QC PP October	Issue Date	: 14-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_QC200_241030	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_QC200_241030	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_QC200_241030	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_QC200_241030	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_QC200_241030	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB2438426**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	[redacted]
Contact	: [redacted]	Contact	[redacted]
[redacted]	: [redacted]		
E-mail	: [redacted]	E-mail	[redacted]
[redacted]	: ----	[redacted]	
Facsimile	: ----	Facsimile	
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73714	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Biannual GW October		
Sampler	: [redacted]		

Dates

Date Samples Received	: 07-Nov-2024 10:30	Issue Date	: 07-Nov-2024
Client Requested Due Date	: 14-Nov-2024	Scheduled Reporting Date	: **14-Nov-2024**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 12.2°C, 14.5°C, 21.6°C - Ice present
Receipt Detail	: ESKY LARGE	No. of samples received / analysed	: 4 / 4

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Unless otherwise stated, analytical work for this work order will be conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818.
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
EB2438426-001	21-Oct-2024 19:55	0990_QC203_20241021	✓
EB2438426-002	17-Oct-2024 20:05	0990_QC200_20241017	✓
EB2438426-003	19-Oct-2024 13:17	0990_QC201_20241018	✓
EB2438426-004	19-Oct-2024 13:06	0990_QC202_20241019	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **EB2438426**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 07-Nov-2024 10:30
Order number	: 60676801/	Date Analysis Commenced	: 08-Nov-2024
C-O-C number	: 73714	Issue Date	: 14-Nov-2024 19:38
Sampler	: [redacted]		
Site	: Biannual GW October		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X PFAS: Sample 0990_QC200_20241017 (EB2438426-002) required dilution due to the presence of high-level contaminants. LOR values have been adjusted accordingly.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC203_20241021	0990_QC200_20241017	0990_QC201_20241018	0990_QC202_20241019	----
			Sampling date / time	21-Oct-2024 19:55	17-Oct-2024 20:05	19-Oct-2024 13:17	19-Oct-2024 13:06	----
Compound	CAS Number	LOR	Unit	EB2438426-001	EB2438426-002	EB2438426-003	EB2438426-004	--------
				Result	Result	Result	Result	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	**58.8**	**0.14**	**1.65**	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	**40.5**	**0.14**	**1.66**	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.10**	**244**	**1.09**	**5.64**	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	**36.0**	**0.08**	**0.20**	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.19**	**1160**	**2.54**	**1.93**	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<2.50	<0.02	<0.02	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	**24.2**	<0.1	**0.5**	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	**36.0**	**0.03**	**0.52**	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**0.06**	**133**	**0.28**	**1.82**	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	**19.5**	**0.04**	**0.21**	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**0.02**	**42.8**	**0.08**	**0.27**	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	**3.00**	<0.02	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<2.50	<0.02	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<2.50	<0.02	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<2.50	<0.02	<0.02	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<2.50	<0.02	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<6.25	<0.05	<0.05	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<2.50	<0.02	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<6.25	<0.05	<0.05	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC203_20241021	0990_QC200_20241017	0990_QC201_20241018	0990_QC202_20241019	----
			Sampling date / time	21-Oct-2024 19:55	17-Oct-2024 20:05	19-Oct-2024 13:17	19-Oct-2024 13:06	----
Compound	CAS Number	LOR	Unit	EB2438426-001	EB2438426-002	EB2438426-003	EB2438426-004	--------
				Result	Result	Result	Result	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<6.25	<0.05	<0.05	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<6.25	<0.05	<0.05	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<6.25	<0.05	<0.05	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<2.50	<0.02	<0.02	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<2.50	<0.02	<0.02	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<2.50	<0.05	<0.05	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<2.50	<0.05	<0.05	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<2.50	<0.05	<0.05	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<2.50	<0.05	<0.05	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.37**	**1800**	**4.42**	**14.4**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.29**	**1400**	**3.63**	**7.57**	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.37**	**1720**	**4.20**	**12.5**	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**106**	**103**	**96.0**	**106**	----
13C8-PFOA	----	0.02	%	**102**	**103**	**87.5**	**110**	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EB2438426**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 07-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 08-Nov-2024
C-O-C number	: 73714	Issue Date	: 14-Nov-2024
Sampler	: [redacted]		
Site	: Biannual GW October		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6179772)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	74.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	77.0	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	70.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	78.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	72.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	75.3	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6179772)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	73.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	74.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	75.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	74.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	72.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	74.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	72.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	69.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	72.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	76.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	86.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6179772)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	67.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	68.8	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	64.3	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	68.5	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	64.9	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	70.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	78.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6179772)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6179772) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	65.3	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.2378 µg/L	71.1	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	82.3	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.241 µg/L	64.5	64.2	133

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2438426**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 07-Nov-2024
Site	: Biannual GW October	Issue Date	: 14-Nov-2024
Sampler	: [redacted]	No. of samples received	: 4
Order number	: 60676801/	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_QC200_20241017	**17-Oct-2024**	**12-Nov-2024**	15-Apr-2025	✓	**12-Nov-2024**	15-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC201_20241018, 0990_QC202_20241019	**19-Oct-2024**	**12-Nov-2024**	17-Apr-2025	✓	**12-Nov-2024**	17-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC203_20241021	**21-Oct-2024**	**12-Nov-2024**	19-Apr-2025	✓	**12-Nov-2024**	19-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_QC200_20241017	**17-Oct-2024**	**12-Nov-2024**	15-Apr-2025	✓	**12-Nov-2024**	15-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC201_20241018, 0990_QC202_20241019	**19-Oct-2024**	**12-Nov-2024**	17-Apr-2025	✓	**12-Nov-2024**	17-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC203_20241021	**21-Oct-2024**	**12-Nov-2024**	19-Apr-2025	✓	**12-Nov-2024**	19-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_QC200_20241017	**17-Oct-2024**	**12-Nov-2024**	15-Apr-2025	✓	**12-Nov-2024**	15-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC201_20241018, 0990_QC202_20241019	**19-Oct-2024**	**12-Nov-2024**	17-Apr-2025	✓	**12-Nov-2024**	17-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC203_20241021	**21-Oct-2024**	**12-Nov-2024**	19-Apr-2025	✓	**12-Nov-2024**	19-Apr-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_QC200_20241017	**17-Oct-2024**	**12-Nov-2024**	15-Apr-2025	✓	**12-Nov-2024**	15-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC201_20241018, 0990_QC202_20241019	**19-Oct-2024**	**12-Nov-2024**	17-Apr-2025	✓	**12-Nov-2024**	17-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC203_20241021	**21-Oct-2024**	**12-Nov-2024**	19-Apr-2025	✓	**12-Nov-2024**	19-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_QC200_20241017	**17-Oct-2024**	**12-Nov-2024**	15-Apr-2025	✓	**12-Nov-2024**	15-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC201_20241018, 0990_QC202_20241019	**19-Oct-2024**	**12-Nov-2024**	17-Apr-2025	✓	**12-Nov-2024**	17-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC203_20241021	**21-Oct-2024**	**12-Nov-2024**	19-Apr-2025	✓	**12-Nov-2024**	19-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB2439270**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Facsimile	: ----	Facsimile	: + [redacted]
Project	: 60676801	Page	: 1 of 3
Order number	: 60676801	Quote number	: ES2024AECOMAU0010
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Tindal		
Sampler	: [redacted]		

[redacted]

Date Samples Received	: 13-Nov-2024 09:30	Issue Date	: 13-Nov-2024
Client Requested Due Date	: 20-Nov-2024	Scheduled Reporting Date	: **20-Nov-2024**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 4.5°C - Ice present
Receipt Detail	: MEDIUM ESKY	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- ***Samples were originally received by ALS Sydney on 12/11/2024 and have been forwarded to ALS Brisbane for analysis. Temperature on arrival in ALS Brisbane has been noted above.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Unless otherwise stated, analytical work for this work order will be conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818.
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
EB2439270-001	07-Nov-2024 00:00	0090_QC200_241107	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **EB2439270**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: + [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 13-Nov-2024 09:30
Order number	: 60676801	Date Analysis Commenced	: 14-Nov-2024
C-O-C number	: ----	Issue Date	: 19-Nov-2024 15:19
Sampler	: [redacted]		
Site	: Tindal		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0090_QC200_241107	----	----	----	----
			Sampling date / time	07-Nov-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2439270-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**0.02**	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.11**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.14**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**0.02**	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0090_QC200_241107	----	----	----	----
			Sampling date / time	07-Nov-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2439270-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.29**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.25**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.29**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**126**	----	----	----	----
13C8-PFOA	----	0.02	%	**88.2**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EB2439270**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 13-Nov-2024
Order number	: 60676801	Date Analysis Commenced	: 14-Nov-2024
C-O-C number	: ----	Issue Date	: 19-Nov-2024
Sampler	: [redacted]		
Site	: Tindal		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6193547)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	107	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	102	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	84.9	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	100	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	100	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	105	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6193547)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	73.0	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	79.4	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	123	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	81.0	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	88.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	101	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	109	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	100	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	82.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	101	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6193547)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	110	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	138	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	78.0	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	82.6	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	82.5	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	102	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	70.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6193547)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6193547) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	109	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.2378 µg/L	94.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	92.5	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.241 µg/L	93.2	64.2	133

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2439270**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 13-Nov-2024
Site	: Tindal	Issue Date	: 19-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	10	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	10	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0090_QC200_241107	**07-Nov-2024**	**18-Nov-2024**	06-May-2025	✓	**18-Nov-2024**	06-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0090_QC200_241107	**07-Nov-2024**	**18-Nov-2024**	06-May-2025	✓	**18-Nov-2024**	06-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0090_QC200_241107	**07-Nov-2024**	**18-Nov-2024**	06-May-2025	✓	**18-Nov-2024**	06-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0090_QC200_241107	**07-Nov-2024**	**18-Nov-2024**	06-May-2025	✓	**18-Nov-2024**	06-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0090_QC200_241107	**07-Nov-2024**	**18-Nov-2024**	06-May-2025	✓	**18-Nov-2024**	06-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	10	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	10	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

CERTIFICATE OF ANALYSIS

Work Order	: **ES2434947**	Page	: 1 of 34
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 25-Oct-2024 10:40
Order number	: 60676801/7.03.01	Date Analysis Commenced	: 04-Nov-2024
C-O-C number	: ----	Issue Date	: 21-Nov-2024 16:02
Sampler	: [redacted]		
Site	: ----		
Quote number	: EN/004/23		
No. of samples received	: 56		
No. of samples analysed	: 52		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X: Poor matrix spike recoveries due to matrix interferences.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X (Biota): ALS NATA accreditation for PFAS in Biota covers all Perfluoroalkyl Sulfonic Acids, Perfluoroalkyl Carboxylic Acids and (n:2) Fluorotelomer Sulfonic Acids in fish (whole and muscle), plants and vegetable matrices, with the exception PFBA (fish only), EtFOSA, MeFOSE, EtFOSE, MeFOSAA, EtFOSAA.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA485_241015	0990_BIOAFA486_241015	0990_BIOAFA487_241015	0990_BIOAFA488_241015	0990_BIOAFA489_241015
			Sampling date / time	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-001	ES2434947-002	ES2434947-003	ES2434947-004	ES2434947-005
				Result	Result	Result	Result	Result
Biota Sample Pre-Preparation								
ø Sample Description	----	-	--	fillet fish	fillet fish	fillet fish	fillet fish	fillet fish
ø Weight of Sample Prepared	----	0.1	g	136	69.4	73.6	59.8	58.8
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	2	µg/kg	<2	<2	<2	<2	<2
Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg	<1	<1	<1	<1	<1
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg	<1	<1	<1	<1	<1
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg	<1	<1	<1	<1	<1
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg	<1	<1	<1	<1	<1
Perfluorooctane sulfonic acid (PFOS) - Linear	2795-39-3	1	µg/kg	12	9	20	26	6
Perfluorooctane sulfonic acid (PFOS) - Branched	----	1	µg/kg	3	2	4	6	2
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg	15	11	24	32	8
Perfluorodecane sulfonic acid (PFDS)	335-77-3	2	µg/kg	<2	<2	<2	<2	<2
Perfluorononane sulfonic acid (PFNS)	68259-12-1	1	µg/kg	<1	<1	<1	<1	<1
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg	<5	<5	<5	<5	<5
Perfluoropentanoic acid (PFPeA)	2706-90-3	2	µg/kg	<2	<2	<2	<2	<2
Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg	<1	<1	<1	<1	<1
Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg	<1	<1	<1	<1	<1
Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg	<1	<1	<1	<1	<1
Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg	<1	<1	<1	<1	<1
Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA485_241015	0990_BIOAFA486_241015	0990_BIOAFA487_241015	0990_BIOAFA488_241015	0990_BIOAFA489_241015
			Sampling date / time	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-001	ES2434947-002	ES2434947-003	ES2434947-004	ES2434947-005
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg	<1	<1	<1	<1	<1
Perfluorododecanoic acid (PFDoDA)	307-55-1	2	µg/kg	<2	<2	<2	<2	<2
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	2	µg/kg	<2	<2	<2	<2	<2
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg	<2	<2	<2	<2	<2
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	5	µg/kg	<5	<5	<5	<5	<5
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	5	µg/kg	<5	<5	<5	<5	<5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg	<2	<2	<2	<2	<2
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg	<2	<2	<2	<2	<2
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg	<2	<2	<2	<2	<2
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg	<1	<1	<1	<1	<1
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg	<1	<1	<1	<1	<1
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg	<2	<2	<2	<2	<2
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg	<2	<2	<2	<2	<2
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg	<2	<2	<2	<2	<2
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg	<2	<2	<2	<2	<2
EP231P: PFAS Sums								

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA485_241015	0990_BIOAFA486_241015	0990_BIOAFA487_241015	0990_BIOAFA488_241015	0990_BIOAFA489_241015
			Sampling date / time	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-001	ES2434947-002	ES2434947-003	ES2434947-004	ES2434947-005
				Result	Result	Result	Result	Result
EP231P: PFAS Sums - Continued								
^ Sum of PFAS	----	1	µg/kg	15	11	24	32	8
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	1	µg/kg	15	11	24	32	8
EP231S: PFAS Surrogate								
13C4-PFOS	----	1	%	90.4	93.1	99.7	91.4	97.0
13C8-PFOA	----	1	%	110	113	107	105	114

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA490_241015	0990_BIOAFA491_241015	0990_BIOAFA492_241015	0990_BIOAFA493_241015	0990_BIOAFA494_241015
			Sampling date / time	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-006	ES2434947-007	ES2434947-008	ES2434947-009	ES2434947-010
				Result	Result	Result	Result	Result
Biota Sample Pre-Preparation								
ø Sample Description	----	-	--	fillet fish	fillet fish	fillet fish	fillet fish	fillet fish
ø Weight of Sample Prepared	----	0.1	g	63.7	36.9	74.1	42.3	48.8
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	2	µg/kg	<2	<2	<2	<2	<2
Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg	<1	<1	<1	<1	<1
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg	<1	<1	<1	<1	<1
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg	<1	<1	<1	<1	<1
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg	<1	<1	<1	<1	<1
Perfluorooctane sulfonic acid (PFOS) - Linear	2795-39-3	1	µg/kg	13	4	89	69	14
Perfluorooctane sulfonic acid (PFOS) - Branched	----	1	µg/kg	4	<1	14	12	1
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg	17	4	103	81	15
Perfluorodecane sulfonic acid (PFDS)	335-77-3	2	µg/kg	<2	<2	<2	<2	<2
Perfluorononane sulfonic acid (PFNS)	68259-12-1	1	µg/kg	<1	<1	<1	<1	<1
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg	<5	<5	<5	<5	<5
Perfluoropentanoic acid (PFPeA)	2706-90-3	2	µg/kg	<2	<2	<2	<2	<2
Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg	<1	<1	<1	<1	<1
Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg	<1	<1	<1	<1	<1
Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg	<1	<1	<1	<1	<1
Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg	<1	<1	<1	<1	<1
Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA490_241015	0990_BIOAFA491_241015	0990_BIOAFA492_241015	0990_BIOAFA493_241015	0990_BIOAFA494_241015
			Sampling date / time	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-006	ES2434947-007	ES2434947-008	ES2434947-009	ES2434947-010
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg	<1	<1	<1	<1	<1
Perfluorododecanoic acid (PFDoDA)	307-55-1	2	µg/kg	<2	<2	<2	<2	<2
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	2	µg/kg	<2	<2	<2	<2	<2
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg	<2	<2	<2	<2	<2
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	5	µg/kg	<5	<5	<5	<5	<5
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	5	µg/kg	<5	<5	<5	<5	<5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg	<2	<2	<2	<2	<2
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg	<2	<2	<2	<2	<2
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg	<2	<2	<2	<2	<2
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg	<1	<1	<1	<1	<1
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg	<1	<1	<1	<1	<1
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg	<2	<2	<2	<2	<2
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg	<2	<2	<2	<2	<2
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg	<2	<2	<2	<2	<2
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg	<2	<2	<2	<2	<2
EP231P: PFAS Sums								

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA490_241015	0990_BIOAFA491_241015	0990_BIOAFA492_241015	0990_BIOAFA493_241015	0990_BIOAFA494_241015
			Sampling date / time	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-006	ES2434947-007	ES2434947-008	ES2434947-009	ES2434947-010
				Result	Result	Result	Result	Result
EP231P: PFAS Sums - Continued								
^ Sum of PFAS	----	1	µg/kg	17	4	103	81	15
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	1	µg/kg	17	4	103	81	15
EP231S: PFAS Surrogate								
13C4-PFOS	----	1	%	92.4	95.8	102	89.3	96.4
13C8-PFOA	----	1	%	111	112	118	115	110

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA495_241015	0990_BIOAFA496_241015	0990_BIOAFA497_241015	0990_BIOAFA498_241015	0990_BIOAFA499_241015
			Sampling date / time	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-011	ES2434947-012	ES2434947-013	ES2434947-014	ES2434947-015
				Result	Result	Result	Result	Result
Biota Sample Pre-Preparation								
ø Sample Description	----	-	--	fillet fish	fillet fish	fillet fish	prawn	prawn
ø Weight of Sample Prepared	----	0.1	g	29.7	50.2	50.7	23.6	10.2
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	2	µg/kg	<2	<2	<2	<2	<2
Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg	<1	<1	<1	<1	<1
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg	<1	<1	<1	<1	<1
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg	<1	<1	<1	<1	<1
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg	<1	<1	<1	<1	<1
Perfluorooctane sulfonic acid (PFOS) - Linear	2795-39-3	1	µg/kg	23	24	26	8	15
Perfluorooctane sulfonic acid (PFOS) - Branched	----	1	µg/kg	4	4	4	3	3
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg	27	28	30	11	18
Perfluorodecane sulfonic acid (PFDS)	335-77-3	2	µg/kg	<2	<2	<2	<2	<2
Perfluorononane sulfonic acid (PFNS)	68259-12-1	1	µg/kg	<1	<1	<1	<1	<1
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg	<5	<5	<5	<5	<5
Perfluoropentanoic acid (PFPeA)	2706-90-3	2	µg/kg	<2	<2	<2	<2	<2
Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg	<1	<1	<1	<1	<1
Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg	<1	<1	<1	<1	<1
Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg	<1	<1	<1	<1	<1
Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg	<1	<1	<1	<1	<1
Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA495_241015	0990_BIOAFA496_241015	0990_BIOAFA497_241015	0990_BIOAFA498_241015	0990_BIOAFA499_241015
			Sampling date / time	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-011	ES2434947-012	ES2434947-013	ES2434947-014	ES2434947-015
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg	<1	<1	<1	<1	<1
Perfluorododecanoic acid (PFDoDA)	307-55-1	2	µg/kg	<2	<2	<2	<2	<2
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	2	µg/kg	<2	<2	<2	<2	<2
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg	<2	<2	<2	<2	<2
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	5	µg/kg	<5	<5	<5	<5	<5
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	5	µg/kg	<5	<5	<5	<5	<5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg	<2	<2	<2	<2	<2
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg	<2	<2	<2	<2	<2
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg	<2	<2	<2	<2	<2
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg	<1	<1	<1	<1	<1
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg	<1	<1	<1	<1	<1
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg	<2	<2	<2	<2	<2
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg	<2	<2	<2	<2	<2
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg	<2	<2	<2	<2	<2
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg	<2	<2	<2	<2	<2
EP231P: PFAS Sums								

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA495_241015	0990_BIOAFA496_241015	0990_BIOAFA497_241015	0990_BIOAFA498_241015	0990_BIOAFA499_241015
			Sampling date / time	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-011	ES2434947-012	ES2434947-013	ES2434947-014	ES2434947-015
				Result	Result	Result	Result	Result
EP231P: PFAS Sums - Continued								
^ Sum of PFAS	----	1	µg/kg	27	28	30	11	18
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	1	µg/kg	27	28	30	11	18
EP231S: PFAS Surrogate								
13C4-PFOS	----	1	%	94.6	90.4	91.0	88.7	90.4
13C8-PFOA	----	1	%	109	107	111	112	103

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA500_241015	0990_BIOAFA501_241016	0990_BIOAFA502_241016	0990_BIOAFA503_241016	0990_BIOAFA504_241016
			Sampling date / time	15-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-016	ES2434947-017	ES2434947-018	ES2434947-019	ES2434947-020
				Result	Result	Result	Result	Result
Biota Sample Pre-Preparation								
ø Sample Description	----	-	--	prawn	fillet fish	fillet fish	fillet fish	fillet fish
ø Weight of Sample Prepared	----	0.1	g	11.1	144	76.3	53.9	36.2
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	2	µg/kg	<2	<2	<2	<2	<2
Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg	<1	<1	<1	<1	<1
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg	<1	<1	<1	<1	<1
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg	1	<1	<1	<1	<1
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg	<1	<1	<1	<1	<1
Perfluorooctane sulfonic acid (PFOS) - Linear	2795-39-3	1	µg/kg	37	12	10	18	21
Perfluorooctane sulfonic acid (PFOS) - Branched	----	1	µg/kg	4	1	1	2	3
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg	41	13	11	20	24
Perfluorodecane sulfonic acid (PFDS)	335-77-3	2	µg/kg	<2	<2	<2	<2	<2
Perfluorononane sulfonic acid (PFNS)	68259-12-1	1	µg/kg	<1	<1	<1	<1	<1
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg	<5	<5	<5	<5	<5
Perfluoropentanoic acid (PFPeA)	2706-90-3	2	µg/kg	<2	<2	<2	<2	<2
Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg	<1	<1	<1	<1	<1
Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg	<1	<1	<1	<1	<1
Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg	<1	<1	<1	<1	<1
Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg	<1	<1	<1	<1	<1
Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA500_241015	0990_BIOAFA501_241016	0990_BIOAFA502_241016	0990_BIOAFA503_241016	0990_BIOAFA504_241016
			Sampling date / time	15-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-016	ES2434947-017	ES2434947-018	ES2434947-019	ES2434947-020
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg	<1	<1	<1	<1	<1
Perfluorododecanoic acid (PFDoDA)	307-55-1	2	µg/kg	<2	<2	<2	<2	<2
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	2	µg/kg	<2	<2	<2	<2	<2
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg	<2	<2	<2	<2	<2
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	5	µg/kg	<5	<5	<5	<5	<5
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	5	µg/kg	<5	<5	<5	<5	<5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg	<2	<2	<2	<2	<2
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg	<2	<2	<2	<2	<2
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg	<2	<2	<2	<2	<2
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg	<1	<1	<1	<1	<1
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg	<1	<1	<1	<1	<1
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg	<2	<2	<2	<2	<2
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg	<2	<2	<2	<2	<2
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg	<2	<2	<2	<2	<2
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg	<2	<2	<2	<2	<2
EP231P: PFAS Sums								

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA500_241015	0990_BIOAFA501_241016	0990_BIOAFA502_241016	0990_BIOAFA503_241016	0990_BIOAFA504_241016
			Sampling date / time	15-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-016	ES2434947-017	ES2434947-018	ES2434947-019	ES2434947-020
				Result	Result	Result	Result	Result
EP231P: PFAS Sums - Continued								
^ Sum of PFAS	----	1	µg/kg	42	13	11	20	24
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	1	µg/kg	42	13	11	20	24
EP231S: PFAS Surrogate								
13C4-PFOS	----	1	%	87.9	84.2	85.5	97.0	85.8
13C8-PFOA	----	1	%	109	93.6	95.0	88.8	94.6

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA505_241016	0990_BIOAFA506_241016	0990_BIOAFA507_241016	0990_BIOAFA508_241016	0990_BIOAFA509_241016
			Sampling date / time	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-021	ES2434947-022	ES2434947-023	ES2434947-024	ES2434947-025
				Result	Result	Result	Result	Result
Biota Sample Pre-Preparation								
ø Sample Description	----	-	--	fillet fish	fillet fish	fillet fish	fillet fish	fillet fish
ø Weight of Sample Prepared	----	0.1	g	61.6	56.7	34.0	46.9	51.8
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	2	µg/kg	<2	<2	<2	<2	<2
Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg	<1	<1	<1	<1	<1
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg	<1	<1	<1	<1	<1
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg	<1	<1	<1	<1	<1
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg	<1	<1	<1	<1	<1
Perfluorooctane sulfonic acid (PFOS) - Linear	2795-39-3	1	µg/kg	15	21	23	84	39
Perfluorooctane sulfonic acid (PFOS) - Branched	----	1	µg/kg	1	1	2	<1	2
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg	16	22	25	83	41
Perfluorodecane sulfonic acid (PFDS)	335-77-3	2	µg/kg	<2	<2	<2	<2	<2
Perfluorononane sulfonic acid (PFNS)	68259-12-1	1	µg/kg	<1	<1	<1	<1	<1
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg	<5	<5	<5	<5	<5
Perfluoropentanoic acid (PFPeA)	2706-90-3	2	µg/kg	<2	<2	<2	<2	<2
Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg	<1	<1	<1	<1	<1
Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg	<1	<1	<1	<1	<1
Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg	<1	<1	<1	<1	<1
Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg	<1	<1	<1	<1	<1
Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA505_241016	0990_BIOAFA506_241016	0990_BIOAFA507_241016	0990_BIOAFA508_241016	0990_BIOAFA509_241016
			Sampling date / time	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-021	ES2434947-022	ES2434947-023	ES2434947-024	ES2434947-025
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg	<1	<1	<1	<1	<1
Perfluorododecanoic acid (PFDoDA)	307-55-1	2	µg/kg	<2	<2	<2	<2	<2
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	2	µg/kg	<2	<2	<2	<2	<2
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg	<2	<2	<2	<2	<2
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	5	µg/kg	<5	<5	<5	<5	<5
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	5	µg/kg	<5	<5	<5	<5	<5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg	<2	<2	<2	<2	<2
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg	<2	<2	<2	<2	<2
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg	<2	<2	<2	<2	<2
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg	<1	<1	<1	<1	<1
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg	<1	<1	<1	<1	<1
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg	<2	<2	<2	<2	<2
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg	<2	<2	<2	<2	<2
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg	<2	<2	<2	<2	<2
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg	<2	<2	<2	<2	<2
EP231P: PFAS Sums								

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA505_241016	0990_BIOAFA506_241016	0990_BIOAFA507_241016	0990_BIOAFA508_241016	0990_BIOAFA509_241016
			Sampling date / time	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-021	ES2434947-022	ES2434947-023	ES2434947-024	ES2434947-025
				Result	Result	Result	Result	Result
EP231P: PFAS Sums - Continued								
^ Sum of PFAS	----	1	µg/kg	16	22	25	83	41
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	1	µg/kg	16	22	25	83	41
EP231S: PFAS Surrogate								
13C4-PFOS	----	1	%	82.2	93.8	93.2	97.4	85.8
13C8-PFOA	----	1	%	95.8	96.2	100	101	102

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA510_241016	0990_BIOAFA511_241016	0990_BIOAFA512_241016	0990_BIOAFA513_241016	0990_BIOAFA514_241016
			Sampling date / time	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-026	ES2434947-027	ES2434947-028	ES2434947-029	ES2434947-030
				Result	Result	Result	Result	Result
Biota Sample Pre-Preparation								
ø Sample Description	----	-	--	fillet fish	fillet fish	fillet fish	fish with skin/bones	fish with skin/bones
ø Weight of Sample Prepared	----	0.1	g	68.3	59.5	38.2	7.5	1.9
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	2	µg/kg	<2	<2	<2	<2	<2
Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg	<1	<1	<1	<1	<1
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg	<1	<1	<1	<1	<1
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg	<1	<1	<1	<1	<1
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg	<1	<1	<1	<1	<1
Perfluorooctane sulfonic acid (PFOS) - Linear	2795-39-3	1	µg/kg	66	39	22	35	57
Perfluorooctane sulfonic acid (PFOS) - Branched	----	1	µg/kg	<1	<1	2	4	6
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg	66	39	24	39	63
Perfluorodecane sulfonic acid (PFDS)	335-77-3	2	µg/kg	<2	<2	<2	<2	<2
Perfluorononane sulfonic acid (PFNS)	68259-12-1	1	µg/kg	<1	<1	<1	<1	<1
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg	<5	<5	<5	<5	<5
Perfluoropentanoic acid (PFPeA)	2706-90-3	2	µg/kg	<2	<2	<2	<2	<2
Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg	<1	<1	<1	<1	<1
Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg	<1	<1	<1	<1	<1
Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg	<1	<1	<1	<1	<1
Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg	<1	<1	<1	<1	<1
Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA510_241016	0990_BIOAFA511_241016	0990_BIOAFA512_241016	0990_BIOAFA513_241016	0990_BIOAFA514_241016
			Sampling date / time	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-026	ES2434947-027	ES2434947-028	ES2434947-029	ES2434947-030
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg	<1	<1	<1	<1	<1
Perfluorododecanoic acid (PFDoDA)	307-55-1	2	µg/kg	<2	<2	<2	<2	<2
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	2	µg/kg	<2	<2	<2	<2	<2
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg	<2	<2	<2	<2	<2
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	5	µg/kg	<5	<5	<5	<5	<5
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	5	µg/kg	<5	<5	<5	<5	<5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg	<2	<2	<2	<2	<2
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg	<2	<2	<2	<2	<2
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg	<2	<2	<2	<2	<2
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg	<1	<1	<1	<1	<1
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg	<1	<1	<1	<1	<1
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg	<2	<2	<2	<2	<2
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg	<2	<2	<2	<2	<2
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg	<2	<2	<2	<2	<2
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg	<2	<2	<2	<2	<2
EP231P: PFAS Sums								

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA510_241016	0990_BIOAFA511_241016	0990_BIOAFA512_241016	0990_BIOAFA513_241016	0990_BIOAFA514_241016
			Sampling date / time	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-026	ES2434947-027	ES2434947-028	ES2434947-029	ES2434947-030
				Result	Result	Result	Result	Result
EP231P: PFAS Sums - Continued								
^ Sum of PFAS	----	1	µg/kg	66	39	24	39	63
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	1	µg/kg	66	39	24	39	63
EP231S: PFAS Surrogate								
13C4-PFOS	----	1	%	97.3	96.0	102	98.0	94.8
13C8-PFOA	----	1	%	96.3	100	97.8	92.8	95.1

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA515_241016	0990_BIOAFA516_241016	0990_BIOAFA517_241016	0990_BIOAFA518_241016	0990_BIOAFA519_241016
			Sampling date / time	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-031	ES2434947-032	ES2434947-033	ES2434947-034	ES2434947-035
				Result	Result	Result	Result	Result
Biota Sample Pre-Preparation								
ø Sample Description	----	-	--	fillet fish	fillet fish	fillet fish	fish with skin/bones	fillet fish
ø Weight of Sample Prepared	----	0.1	g	67.8	44.2	41.2	4.6	47.1
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	2	µg/kg	<2	<2	<2	<2	<2
Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg	<1	<1	<1	<1	<1
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg	<1	<1	<1	<1	<1
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg	<1	<1	<1	2	3
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg	<1	<1	<1	<1	<1
Perfluorooctane sulfonic acid (PFOS) - Linear	2795-39-3	1	µg/kg	23	32	23	89	73
Perfluorooctane sulfonic acid (PFOS) - Branched	----	1	µg/kg	1	3	2	5	8
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg	24	35	25	94	81
Perfluorodecane sulfonic acid (PFDS)	335-77-3	2	µg/kg	<2	<2	<2	<2	<2
Perfluorononane sulfonic acid (PFNS)	68259-12-1	1	µg/kg	<1	<1	<1	<1	<1
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg	<5	<5	<5	<5	<5
Perfluoropentanoic acid (PFPeA)	2706-90-3	2	µg/kg	<2	<2	<2	<2	<2
Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg	<1	<1	<1	<1	<1
Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg	<1	<1	<1	<1	<1
Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg	<1	<1	<1	<1	<1
Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg	<1	<1	<1	<1	<1
Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA515_241016	0990_BIOAFA516_241016	0990_BIOAFA517_241016	0990_BIOAFA518_241016	0990_BIOAFA519_241016
			Sampling date / time	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-031	ES2434947-032	ES2434947-033	ES2434947-034	ES2434947-035
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg	<1	<1	<1	<1	<1
Perfluorododecanoic acid (PFDoDA)	307-55-1	2	µg/kg	<2	<2	<2	<2	<2
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	2	µg/kg	<2	<2	<2	<2	<2
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg	<2	<2	<2	<2	<2
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	5	µg/kg	<5	<5	<5	<5	<5
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	5	µg/kg	<5	<5	<5	<5	<5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg	<2	<2	<2	<2	<2
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg	<2	<2	<2	<2	<2
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg	<2	<2	<2	<2	<2
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg	<1	<1	<1	<1	<1
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg	<1	<1	<1	<1	<1
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg	<2	<2	<2	<2	<2
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg	<2	<2	<2	<2	<2
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg	<2	<2	<2	<2	<2
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg	<2	<2	<2	<2	<2
EP231P: PFAS Sums								

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA515_241016	0990_BIOAFA516_241016	0990_BIOAFA517_241016	0990_BIOAFA518_241016	0990_BIOAFA519_241016
			Sampling date / time	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-031	ES2434947-032	ES2434947-033	ES2434947-034	ES2434947-035
				Result	Result	Result	Result	Result
EP231P: PFAS Sums - Continued								
^ Sum of PFAS	----	1	µg/kg	24	35	25	96	84
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	1	µg/kg	24	35	25	96	84
EP231S: PFAS Surrogate								
13C4-PFOS	----	1	%	93.9	105	101	95.1	102
13C8-PFOA	----	1	%	90.8	102	95.8	100	97.2

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA520_241016	0990_BIOAFA521_241016	0990_BIOAFA522_241016	0990_BIOAFA523_241016	0990_BIOAFA524_241016
			Sampling date / time	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-036	ES2434947-037	ES2434947-038	ES2434947-039	ES2434947-040
				Result	Result	Result	Result	Result
Biota Sample Pre-Preparation								
ø Sample Description	----	-	--	fillet fish	fillet fish	prawn	prawn	prawn
ø Weight of Sample Prepared	----	0.1	g	42.6	36.1	10.7	8.6	4.2
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	2	µg/kg	<2	<2	<2	<2	<2
Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg	<1	<1	<1	<1	<1
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg	<1	<1	<1	<1	<1
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg	2	2	1	1	2
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg	<1	<1	<1	<1	<1
Perfluorooctane sulfonic acid (PFOS) - Linear	2795-39-3	1	µg/kg	88	52	13	15	22
Perfluorooctane sulfonic acid (PFOS) - Branched	----	1	µg/kg	4	4	1	<1	1
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg	92	56	14	15	23
Perfluorodecane sulfonic acid (PFDS)	335-77-3	2	µg/kg	<2	<2	<2	<2	<2
Perfluorononane sulfonic acid (PFNS)	68259-12-1	1	µg/kg	<1	<1	<1	<1	<1
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg	<5	<5	<5	<5	<5
Perfluoropentanoic acid (PFPeA)	2706-90-3	2	µg/kg	<2	<2	<2	<2	<2
Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg	<1	<1	<1	<1	<1
Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg	<1	<1	<1	<1	<1
Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg	<1	<1	<1	<1	<1
Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg	<1	<1	<1	<1	<1
Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg	<1	<1	<1	<1	<1

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA520_241016	0990_BIOAFA521_241016	0990_BIOAFA522_241016	0990_BIOAFA523_241016	0990_BIOAFA524_241016
			Sampling date / time	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-036	ES2434947-037	ES2434947-038	ES2434947-039	ES2434947-040
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg	<1	<1	<1	<1	<1
Perfluorododecanoic acid (PFDoDA)	307-55-1	2	µg/kg	<2	<2	<2	<2	<2
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	2	µg/kg	<2	<2	<2	<2	<2
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg	<2	<2	<2	<2	<2
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	5	µg/kg	<5	<5	<5	<5	<5
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	5	µg/kg	<5	<5	<5	<5	<5
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg	<2	<2	<2	<2	<2
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg	<2	<2	<2	<2	<2
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg	<2	<2	<2	<2	<2
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg	<1	<1	<1	<1	<1
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg	<1	<1	<1	<1	<1
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg	<2	<2	<2	<2	<2
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg	<2	<2	<2	<2	<2
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg	<2	<2	<2	<2	<2
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg	<2	<2	<2	<2	<2
EP231P: PFAS Sums								

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_BIOAFA520_241016	0990_BIOAFA521_241016	0990_BIOAFA522_241016	0990_BIOAFA523_241016	0990_BIOAFA524_241016
			Sampling date / time	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00	16-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-036	ES2434947-037	ES2434947-038	ES2434947-039	ES2434947-040
				Result	Result	Result	Result	Result
EP231P: PFAS Sums - Continued								
^ Sum of PFAS	----	1	µg/kg	94	58	15	16	25
^ Sum of PFHxS and PFOS	355-46-4/1763-23-1	1	µg/kg	94	58	15	16	25
EP231S: PFAS Surrogate								
13C4-PFOS	----	1	%	86.8	100	99.8	103	107
13C8-PFOA	----	1	%	93.8	103	93.2	100	94.2

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_QC157_241015	0990_QC158_241015	0990_QC159_241015	0990_QC160_241015	----
			Sampling date / time	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	----
Compound	CAS Number	LOR	Unit	ES2434947-042	ES2434947-043	ES2434947-044	ES2434947-045	--------
				Result	Result	Result	Result	----
Biota Sample Pre-Preparation								
ø Sample Description	----	-	--	fillet fish	fillet fish	fillet fish	fillet fish	----
ø Weight of Sample Prepared	----	0.1	g	109	51.8	77.3	52.7	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	2	µg/kg	<2	<2	<2	<2	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg	<1	<1	<1	<1	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg	<1	<1	<1	<1	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg	<1	<1	<1	<1	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg	<1	<1	<1	<1	----
Perfluorooctane sulfonic acid (PFOS) - Linear	2795-39-3	1	µg/kg	10	10	22	28	----
Perfluorooctane sulfonic acid (PFOS) - Branched	----	1	µg/kg	2	2	2	2	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg	12	12	24	30	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	2	µg/kg	<2	<2	<2	<2	----
Perfluorononane sulfonic acid (PFNS)	68259-12-1	1	µg/kg	<1	<1	<1	<1	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg	<5	<5	<5	<5	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	2	µg/kg	<2	<2	<2	<2	----
Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg	<1	<1	<1	<1	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg	<1	<1	<1	<1	----
Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg	<1	<1	<1	<1	----
Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg	<1	<1	<1	<1	----
Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg	<1	<1	<1	<1	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg	<1	<1	<1	<1	----

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_QC157_241015	0990_QC158_241015	0990_QC159_241015	0990_QC160_241015	----
			Sampling date / time	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	----
Compound	CAS Number	LOR	Unit	ES2434947-042	ES2434947-043	ES2434947-044	ES2434947-045	--------
				Result	Result	Result	Result	----
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorododecanoic acid (PFDoDA)	307-55-1	2	µg/kg	<2	<2	<2	<2	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	2	µg/kg	<2	<2	<2	<2	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg	<2	<2	<2	<2	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	5	µg/kg	<5	<5	<5	<5	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	5	µg/kg	<5	<5	<5	<5	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg	<2	<2	<2	<2	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg	<2	<2	<2	<2	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg	<2	<2	<2	<2	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg	<1	<1	<1	<1	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg	<1	<1	<1	<1	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg	<2	<2	<2	<2	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg	<2	<2	<2	<2	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg	<2	<2	<2	<2	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg	<2	<2	<2	<2	----
EP231P: PFAS Sums								
^ Sum of PFAS	----	1	µg/kg	**12**	**12**	**24**	**30**	----

Analytical Results

Sub-Matrix: BIOTA (Matrix: BIOTA)			Sample ID	0990_QC157_241015	0990_QC158_241015	0990_QC159_241015	0990_QC160_241015	----
			Sampling date / time	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	15-Oct-2024 00:00	----
Compound	CAS Number	LOR	Unit	ES2434947-042	ES2434947-043	ES2434947-044	ES2434947-045	--------
				Result	Result	Result	Result	----
EP231P: PFAS Sums - Continued								
^ **Sum of PFHxS and PFOS**	355-46-4/1763-23-1	1	µg/kg	**12**	**12**	**24**	**30**	**----**
EP231S: PFAS Surrogate								
13C4-PFOS	----	1	%	**104**	**101**	**90.8**	**102**	**----**
13C8-PFOA	----	1	%	**96.7**	**91.4**	**95.7**	**91.4**	**----**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC156_241016	0990_QC308_241017	0990_QC309_241017	0990_QC401_241015	0990_QC402_241016
			Sampling date / time	16-Oct-2024 00:00	17-Oct-2024 00:00	17-Oct-2024 00:00	15-Oct-2024 00:00	16-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-041	ES2434947-050	ES2434947-051	ES2434947-052	ES2434947-053
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.07**	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.09**	<0.01	<0.01	<0.01	<0.01
Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC156_241016	0990_QC308_241017	0990_QC309_241017	0990_QC401_241015	0990_QC402_241016
			Sampling date / time	16-Oct-2024 00:00	17-Oct-2024 00:00	17-Oct-2024 00:00	15-Oct-2024 00:00	16-Oct-2024 00:00
Compound	CAS Number	LOR	Unit	ES2434947-041	ES2434947-050	ES2434947-051	ES2434947-052	ES2434947-053
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.16**	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.16**	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.16**	<0.01	<0.01	<0.01	<0.01

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC507_241017	0990_QC508_241017	0990_SW151_241016	----	----
			Sampling date / time	17-Oct-2024 00:00	17-Oct-2024 00:00	16-Oct-2024 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2434947-054	ES2434947-055	ES2434947-056	--------	--------
				Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	**0.08**	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	**0.09**	----	----
Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EP231C: Perfluoroalkyl Sulfonamides								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC507_241017	0990_QC508_241017	0990_SW151_241016	----	----
			Sampling date / time	17-Oct-2024 00:00	17-Oct-2024 00:00	16-Oct-2024 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2434947-054	ES2434947-055	ES2434947-056	--------	--------
				Result	Result	Result	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	**0.17**	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	**0.17**	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	**0.17**	----	----

Surrogate Control Limits

Sub-Matrix: **BIOTA**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	50	130
13C8-PFOA	----	50	130

QUALITY CONTROL REPORT

Work Order	: **ES2434947**	Page	: 1 of 25
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 25-Oct-2024
Order number	: 60676801/7.03.01	Date Analysis Commenced	: 04-Nov-2024
C-O-C number	: ----	Issue Date	: 21-Nov-2024
Sampler	: [redacted]		
Site	: ----		
Quote number	: EN/004/23		
No. of samples received	: 56		
No. of samples analysed	: 52		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **BIOTA**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6190514)									
ES2434947-001	0990_BIOAFA485_241015	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg	15	14	8.5	0% - 50%
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	2	µg/kg	<2	<2	0.0	No Limit
ES2434947-011	0990_BIOAFA495_241015	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg	27	27	0.0	0% - 20%
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	2	µg/kg	<2	<2	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6190515)									
ES2434947-017	0990_BIOAFA501_241016	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg	<1	<1	0.0	No Limit

Sub-Matrix: **BIOTA**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6190515) - continued									
ES2434947-017	0990_BIOAFA501_241016	EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg	13	14	9.0	0% - 50%
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	2	µg/kg	<2	<2	0.0	No Limit
ES2434947-027	0990_BIOAFA511_241016	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg	39	40	0.0	0% - 20%
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	2	µg/kg	<2	<2	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6190518)									
ES2434947-032	0990_BIOAFA516_241016	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg	35	41	15.1	0% - 20%
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	2	µg/kg	<2	<2	0.0	No Limit
ES2434947-043	0990_QC158_241015	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg	12	11	0.0	0% - 50%
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	2	µg/kg	<2	<2	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6190514)									
ES2434947-001	0990_BIOAFA485_241015	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg	<1	<1	0.0	No Limit

Sub-Matrix: **BIOTA**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6190514) - continued									
ES2434947-001	0990_BIOAFA485_241015	EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg	<5	<5	0.0	No Limit
ES2434947-011	0990_BIOAFA495_241015	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg	<5	<5	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6190515)									
ES2434947-017	0990_BIOAFA501_241016	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg	<5	<5	0.0	No Limit
ES2434947-027	0990_BIOAFA511_241016	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg	<5	<5	0.0	No Limit

Sub-Matrix: **BIOTA**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6190518)									
ES2434947-032	0990_BIOAFA516_241016	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg	<5	<5	0.0	No Limit
ES2434947-043	0990_QC158_241015	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	1 (2)*	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg	<5	<5	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6190514)									
ES2434947-001	0990_BIOAFA485_241015	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	1 (5)*	µg/kg	<5	<5	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	2 (5)*	µg/kg	<5	<5	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg	<2	<2	0.0	No Limit
ES2434947-011	0990_BIOAFA495_241015	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	1 (5)*	µg/kg	<5	<5	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg	<1	<1	0.0	No Limit

Sub-Matrix: **BIOTA**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6190514) - continued									
ES2434947-011	0990_BIOAFA495_241015	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	2 (5)*	µg/kg	<5	<5	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg	<2	<2	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6190515)									
ES2434947-017	0990_BIOAFA501_241016	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	1 (5)*	µg/kg	<5	<5	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	2 (5)*	µg/kg	<5	<5	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg	<2	<2	0.0	No Limit
ES2434947-027	0990_BIOAFA511_241016	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	1 (5)*	µg/kg	<5	<5	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	2 (5)*	µg/kg	<5	<5	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg	<2	<2	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6190518)									
ES2434947-032	0990_BIOAFA516_241016	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	1 (5)*	µg/kg	<5	<5	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg	<1	<1	0.0	No Limit

Sub-Matrix: **BIOTA**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6190518) - continued									
ES2434947-032	0990_BIOAFA516_241016	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	2 (5)*	µg/kg	<5	<5	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg	<2	<2	0.0	No Limit
ES2434947-043	0990_QC158_241015	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	1 (5)*	µg/kg	<5	<5	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg	<1	<1	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	2 (5)*	µg/kg	<5	<5	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg	<2	<2	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6190514)									
ES2434947-001	0990_BIOAFA485_241015	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg	<2	<2	0.0	No Limit
ES2434947-011	0990_BIOAFA495_241015	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg	<2	<2	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6190515)									

Sub-Matrix: **BIOTA**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6190515) - continued									
ES2434947-017	0990_BIOAFA501_241016	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg	<2	<2	0.0	No Limit
ES2434947-027	0990_BIOAFA511_241016	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg	<2	<2	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6190518)									
ES2434947-032	0990_BIOAFA516_241016	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg	<2	<2	0.0	No Limit
ES2434947-043	0990_QC158_241015	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg	<2	<2	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg	<2	<2	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6190514)									
ES2434947-001	0990_BIOAFA485_241015	EP231X: Sum of PFAS	----	1	µg/kg	15	14	6.9	0% - 50%
ES2434947-011	0990_BIOAFA495_241015	EP231X: Sum of PFAS	----	1	µg/kg	27	27	0.0	0% - 20%
EP231P: PFAS Sums (QC Lot: 6190515)									
ES2434947-017	0990_BIOAFA501_241016	EP231X: Sum of PFAS	----	1	µg/kg	13	14	7.4	0% - 50%
ES2434947-027	0990_BIOAFA511_241016	EP231X: Sum of PFAS	----	1	µg/kg	39	40	2.5	0% - 20%
EP231P: PFAS Sums (QC Lot: 6190518)									

Sub-Matrix: **BIOTA**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231P: PFAS Sums (QC Lot: 6190518) - continued									
ES2434947-032	0990_BIOAFA516_241016	EP231X: Sum of PFAS	----	1	µg/kg	35	41	15.8	0% - 20%
ES2434947-043	0990_QC158_241015	EP231X: Sum of PFAS	----	1	µg/kg	12	11	8.7	0% - 50%

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6195306)									
ES2437137-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2437135-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6195734) - continued									
ES2437293-003	Anonymous	EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195306)									
ES2437137-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2437135-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734) - continued									
ES2437293-003	Anonymous	EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6195306)									
ES2437137-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437135-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6195734) - continued									
ES2437293-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6195306)									
ES2437137-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437135-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6195306) - continued									
ES2437135-003	Anonymous	EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6195306)									
ES2437137-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2437135-003	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.02	0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	0.02	66.7	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **BIOTA**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6190514)								
EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	2	µg/kg	<2	5 µg/kg	93.5	70.0	130
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg	<1	5 µg/kg	104	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg	<1	5 µg/kg	89.5	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg	<1	5 µg/kg	87.2	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg	<1	5 µg/kg	89.0	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg	<1	5 µg/kg	95.6	68.0	136
EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	1	µg/kg	<1	5 µg/kg	93.8	70.0	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	1	µg/kg	<1	5 µg/kg	95.2	59.0	134
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6190515)								
EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	2	µg/kg	<2	5 µg/kg	78.7	70.0	130
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg	<1	5 µg/kg	93.4	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg	<1	5 µg/kg	118	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg	<1	5 µg/kg	91.7	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg	<1	5 µg/kg	79.3	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg	<1	5 µg/kg	86.0	68.0	136
EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	1	µg/kg	<1	5 µg/kg	95.0	70.0	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	1	µg/kg	<1	5 µg/kg	93.1	59.0	134
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6190518)								
EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	2	µg/kg	<2	5 µg/kg	75.3	70.0	130
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	1	µg/kg	<1	5 µg/kg	73.5	72.0	128
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	1	µg/kg	<1	5 µg/kg	95.5	73.0	123
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	1	µg/kg	<1	5 µg/kg	77.0	67.0	130
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	1	µg/kg	<1	5 µg/kg	98.2	70.0	132
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	1	µg/kg	<1	5 µg/kg	82.0	68.0	136
EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	1	µg/kg	<1	5 µg/kg	81.8	70.0	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	1	µg/kg	<1	5 µg/kg	83.4	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6190514)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg	<5	25 µg/kg	97.3	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	1	µg/kg	<1	5 µg/kg	97.2	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg	<1	5 µg/kg	106	70.0	132

Sub-Matrix: **BIOTA**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6190514) - continued								
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg	<1	5 µg/kg	108	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg	<1	5 µg/kg	90.1	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg	<1	5 µg/kg	101	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg	<1	5 µg/kg	94.5	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg	<1	5 µg/kg	90.0	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	1	µg/kg	<1	5 µg/kg	94.9	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	1	µg/kg	<1	5 µg/kg	101	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg	<2	12.5 µg/kg	97.5	69.0	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6190515)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg	<5	25 µg/kg	97.6	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	1	µg/kg	<1	5 µg/kg	103	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg	<1	5 µg/kg	75.3	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg	<1	5 µg/kg	80.1	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg	<1	5 µg/kg	86.4	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg	<1	5 µg/kg	93.5	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg	<1	5 µg/kg	79.0	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg	<1	5 µg/kg	78.0	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	1	µg/kg	<1	5 µg/kg	99.6	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	1	µg/kg	<1	5 µg/kg	99.8	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg	<2	12.5 µg/kg	73.4	69.0	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6190518)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	5	µg/kg	<5	25 µg/kg	85.8	71.0	135
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	1	µg/kg	<1	5 µg/kg	82.4	69.0	132
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	1	µg/kg	<1	5 µg/kg	83.1	70.0	132
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	1	µg/kg	<1	5 µg/kg	92.3	71.0	131
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	1	µg/kg	<1	5 µg/kg	86.7	69.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	1	µg/kg	<1	5 µg/kg	107	72.0	129
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	1	µg/kg	<1	5 µg/kg	91.3	69.0	133
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	1	µg/kg	<1	5 µg/kg	85.6	64.0	136
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	1	µg/kg	<1	5 µg/kg	87.8	69.0	135
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	1	µg/kg	<1	5 µg/kg	107	66.0	139
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	2	µg/kg	<2	12.5 µg/kg	91.5	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6190514)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	1	µg/kg	<1	5 µg/kg	97.8	67.0	137

Sub-Matrix: **BIOTA**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6190514) - continued								
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	2	µg/kg	<2	12.5 µg/kg	91.0	88.1	105
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg	<2	12.5 µg/kg	97.1	81.6	144
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg	<2	12.5 µg/kg	99.6	84.7	135
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg	<2	12.5 µg/kg	99.2	20.5	150
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg	<1	5 µg/kg	96.3	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg	<1	5 µg/kg	94.9	61.0	139
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6190515)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	1	µg/kg	<1	5 µg/kg	87.4	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	2	µg/kg	<2	12.5 µg/kg	# 109	88.1	105
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg	<2	12.5 µg/kg	# 80.5	81.6	144
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg	<2	12.5 µg/kg	105	84.7	135
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg	<2	12.5 µg/kg	94.2	20.5	150
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg	<1	5 µg/kg	88.4	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg	<1	5 µg/kg	94.2	61.0	139
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6190518)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	1	µg/kg	<1	5 µg/kg	81.0	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	2	µg/kg	<2	12.5 µg/kg	99.4	88.1	105
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	2	µg/kg	<2	12.5 µg/kg	101	81.6	144
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	2	µg/kg	<2	12.5 µg/kg	95.3	84.7	135
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	2	µg/kg	<2	12.5 µg/kg	79.9	20.5	150
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	1	µg/kg	<1	5 µg/kg	95.8	63.0	144
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	1	µg/kg	<1	5 µg/kg	89.0	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6190514)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg	<2	5 µg/kg	95.8	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg	<2	5 µg/kg	101	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg	<2	5 µg/kg	122	65.0	137

Sub-Matrix: **BIOTA**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6190514) - continued								
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg	<2	5 µg/kg	94.4	93.4	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6190515)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg	<2	5 µg/kg	85.7	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg	<2	5 µg/kg	90.2	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg	<2	5 µg/kg	93.1	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg	<2	5 µg/kg	# 81.6	93.4	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6190518)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	2	µg/kg	<2	5 µg/kg	75.0	62.0	145
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	2	µg/kg	<2	5 µg/kg	90.3	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	2	µg/kg	<2	5 µg/kg	84.5	65.0	137
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	2	µg/kg	<2	5 µg/kg	# 92.5	93.4	130
EP231P: PFAS Sums (QCLot: 6190514)								
EP231X: Sum of PFAS	----	1	µg/kg	<1	----	----	----	----
EP231P: PFAS Sums (QCLot: 6190515)								
EP231X: Sum of PFAS	----	1	µg/kg	<1	----	----	----	----
EP231P: PFAS Sums (QCLot: 6190518)								
EP231X: Sum of PFAS	----	1	µg/kg	<1	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195306)								
EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	0.25 µg/L	89.7	70.0	130
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	83.1	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	92.5	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	72.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	84.5	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	83.5	65.0	140
EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	0.25 µg/L	81.6	70.0	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	79.8	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)								
EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	0.25 µg/L	90.4	70.0	130
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	76.9	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	82.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	78.1	68.0	131

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734) - continued								
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.3	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	88.2	65.0	140
EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	0.25 µg/L	88.3	70.0	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195306)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	86.9	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	75.9	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	85.7	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	91.3	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	85.8	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	99.1	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	89.6	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	84.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	87.4	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	97.5	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	87.1	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	87.0	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	84.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	86.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	82.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	91.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	87.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.1	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	94.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	96.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	112	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195306)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.3	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	92.8	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	103	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	77.4	66.0	145

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195306) - continued								
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	79.2	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	84.8	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	85.6	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	90.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	98.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.2	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	89.9	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	81.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195306)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	95.2	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	80.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	78.6	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	71.9	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	84.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	97.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	90.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	76.1	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **BIOTA**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6190514)							

Sub-Matrix: **BIOTA**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6190514) - continued							
ES2434947-002	0990_BIOAFA486_241015	EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	5 µg/kg	114	70.0	130
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	5 µg/kg	106	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	5 µg/kg	77.9	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	5 µg/kg	89.5	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	5 µg/kg	86.4	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	5 µg/kg	134	68.0	136
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	5 µg/kg	90.9	70.0	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	5 µg/kg	95.1	59.0	134
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6190515)							
ES2434947-018	0990_BIOAFA502_241016	EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	5 µg/kg	75.6	70.0	130
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	5 µg/kg	98.6	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	5 µg/kg	97.8	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	5 µg/kg	101	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	5 µg/kg	74.3	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	5 µg/kg	99.8	68.0	136
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	5 µg/kg	99.6	70.0	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	5 µg/kg	94.7	59.0	134
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6190518)							
ES2434947-033	0990_BIOAFA517_241016	EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	5 µg/kg	# 8.2	70.0	130
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	5 µg/kg	# 51.1	72.0	128
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	5 µg/kg	77.0	73.0	123
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	5 µg/kg	93.2	67.0	130
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	5 µg/kg	95.6	70.0	132
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	5 µg/kg	# Not Determined	68.0	136
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	5 µg/kg	87.4	70.0	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	5 µg/kg	87.4	59.0	134
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6190514)							
ES2434947-002	0990_BIOAFA486_241015	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	25 µg/kg	83.5	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	5 µg/kg	93.6	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	5 µg/kg	120	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	5 µg/kg	97.7	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	5 µg/kg	82.3	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	5 µg/kg	88.8	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	5 µg/kg	83.2	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	5 µg/kg	81.4	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	5 µg/kg	87.8	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	5 µg/kg	90.6	66.0	139

Sub-Matrix: **BIOTA**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6190514) - continued							
ES2434947-002	0990_BIOAFA486_241015	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	12.5 µg/kg	94.9	69.0	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6190515)							
ES2434947-018	0990_BIOAFA502_241016	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	25 µg/kg	92.7	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	5 µg/kg	106	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	5 µg/kg	74.3	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	5 µg/kg	80.6	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	5 µg/kg	87.8	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	5 µg/kg	86.4	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	5 µg/kg	78.8	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	5 µg/kg	78.0	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	5 µg/kg	94.5	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	5 µg/kg	95.5	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	12.5 µg/kg	75.6	69.0	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6190518)							
ES2434947-033	0990_BIOAFA517_241016	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	25 µg/kg	99.2	71.0	135
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	5 µg/kg	# 58.9	69.0	132
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	5 µg/kg	81.6	70.0	132
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	5 µg/kg	96.4	71.0	131
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	5 µg/kg	89.3	69.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	5 µg/kg	110	72.0	129
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	5 µg/kg	88.7	69.0	133
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	5 µg/kg	90.0	64.0	136
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	5 µg/kg	86.3	69.0	135
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	5 µg/kg	103	66.0	139
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	12.5 µg/kg	101	69.0	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6190514)							
ES2434947-002	0990_BIOAFA486_241015	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	5 µg/kg	88.1	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	12.5 µg/kg	97.9	88.1	105
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	12.5 µg/kg	110	81.6	144
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	12.5 µg/kg	105	84.7	135
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	12.5 µg/kg	87.6	20.5	150
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	5 µg/kg	88.3	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	5 µg/kg	87.3	61.0	139

Sub-Matrix: **BIOTA**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6190515)							
ES2434947-018	0990_BIOAFA502_241016	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	5 µg/kg	87.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	12.5 µg/kg	103	88.1	105
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	12.5 µg/kg	89.6	81.6	144
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	12.5 µg/kg	98.2	84.7	135
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	12.5 µg/kg	88.7	20.5	150
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	5 µg/kg	85.7	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	5 µg/kg	99.7	61.0	139
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6190518)							
ES2434947-033	0990_BIOAFA517_241016	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	5 µg/kg	79.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	12.5 µg/kg	94.4	88.1	105
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	12.5 µg/kg	95.8	81.6	144
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	12.5 µg/kg	# 83.2	84.7	135
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	12.5 µg/kg	82.3	20.5	150
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	5 µg/kg	96.6	63.0	144
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	5 µg/kg	100	61.0	139
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6190514)							
ES2434947-002	0990_BIOAFA486_241015	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	5 µg/kg	91.3	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	5 µg/kg	89.2	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	5 µg/kg	97.4	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	5 µg/kg	97.8	93.4	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6190515)							
ES2434947-018	0990_BIOAFA502_241016	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	5 µg/kg	107	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	5 µg/kg	87.3	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	5 µg/kg	92.9	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	5 µg/kg	# 80.6	93.4	130
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6190518)							
ES2434947-033	0990_BIOAFA517_241016	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	5 µg/kg	116	62.0	145
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	5 µg/kg	84.4	64.0	140

Sub-Matrix: **BIOTA**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6190518) - continued							
ES2434947-033	0990_BIOAFA517_241016	EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	5 µg/kg	90.8	65.0	137
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	5 µg/kg	94.6	93.4	130

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195306)							
ES2437136-002	Anonymous	EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.25 µg/L	70.9	70.0	130
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	79.2	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	81.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	74.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	90.3	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	81.7	65.0	140
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.25 µg/L	76.1	70.0	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	70.8	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.25 µg/L	93.8	70.0	130
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	78.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	86.6	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	79.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	97.9	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	85.2	65.0	140
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.25 µg/L	85.9	70.0	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	74.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195306)							
ES2437136-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	94.7	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	73.3	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	82.7	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	80.7	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	83.2	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	107	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	82.0	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84.1	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	80.0	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	87.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	81.8	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	88.1	72.0	129

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734) - continued							
ES2437293-002	Anonymous	EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	83.7	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	90.5	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	86.5	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	91.1	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	90.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	100	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	96.1	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	98.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	117	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195306)							
ES2437136-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	89.4	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	92.1	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	87.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	87.9	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	83.4	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	81.8	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	90.8	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	92.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	103	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.2	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	85.4	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	94.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	98.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	87.5	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195306)							
ES2437136-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	78.3	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	78.7	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	71.9	67.0	138

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195306) - continued							
ES2437136-002	Anonymous	EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	79.0	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	80.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	87.5	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	84.7	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	79.9	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2434947**	Page	: 1 of 11
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	[redacted]
Contact	: [redacted]	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 25-Oct-2024
Site	: ----	Issue Date	: 21-Nov-2024
Sampler	: [redacted]	No. of samples received	: 56
Order number	: 60676801/7.03.01	No. of samples analysed	: 52

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **BIOTA**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EP231C: Perfluoroalkyl Sulfonamides	QC-6190515-002	----	**N-Methyl perfluorooctane sulfonamide (MeFOSA)**	31506-32-8	109 %	88.1-105%	**Recovery greater than upper control limit**
EP231C: Perfluoroalkyl Sulfonamides	QC-6190515-002	----	**N-Ethyl perfluorooctane sulfonamide (EtFOSA)**	4151-50-2	80.5 %	81.6-144%	**Recovery less than lower control limit**
EP231D: (n:2) Fluorotelomer Sulfonic Acids	QC-6190515-002	----	**10:2 Fluorotelomer sulfonic acid (10:2 FTS)**	120226-60-0	81.6 %	93.4-130%	**Recovery less than lower control limit**
EP231D: (n:2) Fluorotelomer Sulfonic Acids	QC-6190518-002	----	**10:2 Fluorotelomer sulfonic acid (10:2 FTS)**	120226-60-0	92.5 %	93.4-130%	**Recovery less than lower control limit**
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	ES2434947--033	0990_BIOAFA517_241016	**Perfluoropropane sulfonic acid (PFPrS)**	423-41-6	8.2 %	70.0-130%	**Recovery less than lower data quality objective**
EP231A: Perfluoroalkyl Sulfonic Acids	ES2434947--033	0990_BIOAFA517_241016	**Perfluorobutane sulfonic acid (PFBS)**	375-73-5	51.1 %	72.0-128%	**Recovery less than lower data quality objective**
EP231A: Perfluoroalkyl Sulfonic Acids	ES2434947--033	0990_BIOAFA517_241016	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	ES2434947--033	0990_BIOAFA517_241016	**Perfluoropentanoic acid (PFPeA)**	2706-90-3	58.9 %	69.0-132%	**Recovery less than lower data quality objective**
EP231C: Perfluoroalkyl Sulfonamides	ES2434947--033	0990_BIOAFA517_241016	**N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)**	24448-09-7	83.2 %	84.7-135%	**Recovery less than lower data quality objective**
EP231D: (n:2) Fluorotelomer Sulfonic Acids	ES2434947--018	0990_BIOAFA502_241016	**10:2 Fluorotelomer sulfonic acid (10:2 FTS)**	120226-60-0	80.6 %	93.4-130%	**Recovery less than lower data quality objective**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **BIOTA**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
Biota Sample Pre-Preparation								
Snap Lock Bag (Biota-PP)								
0990_BIOAFA485_241015,	0990_BIOAFA486_241015,	**15-Oct-2024**	**11-Nov-2024**	----	----	**----**	----	----
0990_BIOAFA487_241015,	0990_BIOAFA488_241015,							
0990_BIOAFA489_241015,	0990_BIOAFA490_241015,							
0990_BIOAFA491_241015,	0990_BIOAFA492_241015,							
0990_BIOAFA493_241015,	0990_BIOAFA494_241015,							
0990_BIOAFA495_241015,	0990_BIOAFA496_241015,							
0990_BIOAFA497_241015,	0990_BIOAFA498_241015,							
0990_BIOAFA499_241015,	0990_BIOAFA500_241015,							
0990_QC157_241015,	0990_QC158_241015,							
0990_QC159_241015,	0990_QC160_241015							
Snap Lock Bag (Biota-PP)								
0990_BIOAFA501_241016,	0990_BIOAFA502_241016,	**16-Oct-2024**	**11-Nov-2024**	----	----	**----**	----	----
0990_BIOAFA503_241016,	0990_BIOAFA504_241016,							
0990_BIOAFA505_241016,	0990_BIOAFA506_241016,							
0990_BIOAFA507_241016,	0990_BIOAFA508_241016,							
0990_BIOAFA509_241016,	0990_BIOAFA510_241016,							
0990_BIOAFA511_241016,	0990_BIOAFA512_241016,							
0990_BIOAFA513_241016,	0990_BIOAFA514_241016,							
0990_BIOAFA515_241016,	0990_BIOAFA516_241016,							
0990_BIOAFA517_241016,	0990_BIOAFA518_241016,							
0990_BIOAFA519_241016,	0990_BIOAFA520_241016,							
0990_BIOAFA521_241016,	0990_BIOAFA522_241016,							
0990_BIOAFA523_241016,	0990_BIOAFA524_241016							

Matrix: **BIOTA**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
Snap Lock Bag (EP231-PFOS-SP) 0990_BIOAFA485_241015, 0990_BIOAFA486_241015, 0990_BIOAFA487_241015, 0990_BIOAFA488_241015, 0990_BIOAFA489_241015, 0990_BIOAFA490_241015, 0990_BIOAFA491_241015, 0990_BIOAFA492_241015, 0990_BIOAFA493_241015, 0990_BIOAFA494_241015, 0990_BIOAFA495_241015, 0990_BIOAFA496_241015, 0990_BIOAFA497_241015, 0990_BIOAFA498_241015, 0990_BIOAFA499_241015, 0990_BIOAFA500_241015	**15-Oct-2024**	**15-Nov-2024**	13-Apr-2025	✓	**18-Nov-2024**	25-Dec-2024	✓
Snap Lock Bag (EP231X) 0990_BIOAFA485_241015, 0990_BIOAFA486_241015, 0990_BIOAFA487_241015, 0990_BIOAFA488_241015, 0990_BIOAFA489_241015, 0990_BIOAFA490_241015, 0990_BIOAFA491_241015, 0990_BIOAFA492_241015, 0990_BIOAFA493_241015, 0990_BIOAFA494_241015, 0990_BIOAFA495_241015, 0990_BIOAFA496_241015, 0990_BIOAFA497_241015, 0990_BIOAFA498_241015, 0990_BIOAFA499_241015, 0990_BIOAFA500_241015	**15-Oct-2024**	**15-Nov-2024**	13-Apr-2025	✓	**19-Nov-2024**	25-Dec-2024	✓
Snap Lock Bag (EP231-PFOS-SP) 0990_QC157_241015, 0990_QC158_241015, 0990_QC159_241015, 0990_QC160_241015	**15-Oct-2024**	**19-Nov-2024**	13-Apr-2025	✓	**20-Nov-2024**	29-Dec-2024	✓
Snap Lock Bag (EP231X) 0990_QC157_241015, 0990_QC158_241015, 0990_QC159_241015, 0990_QC160_241015	**15-Oct-2024**	**19-Nov-2024**	13-Apr-2025	✓	**21-Nov-2024**	29-Dec-2024	✓
Snap Lock Bag (EP231-PFOS-SP) 0990_BIOAFA501_241016, 0990_BIOAFA502_241016, 0990_BIOAFA503_241016, 0990_BIOAFA504_241016, 0990_BIOAFA505_241016, 0990_BIOAFA506_241016, 0990_BIOAFA507_241016, 0990_BIOAFA508_241016, 0990_BIOAFA509_241016, 0990_BIOAFA510_241016, 0990_BIOAFA511_241016, 0990_BIOAFA512_241016, 0990_BIOAFA513_241016, 0990_BIOAFA514_241016, 0990_BIOAFA515_241016	**16-Oct-2024**	**18-Nov-2024**	14-Apr-2025	✓	**18-Nov-2024**	28-Dec-2024	✓
Snap Lock Bag (EP231X) 0990_BIOAFA501_241016, 0990_BIOAFA502_241016, 0990_BIOAFA503_241016, 0990_BIOAFA504_241016, 0990_BIOAFA505_241016, 0990_BIOAFA506_241016, 0990_BIOAFA507_241016, 0990_BIOAFA508_241016, 0990_BIOAFA509_241016, 0990_BIOAFA510_241016, 0990_BIOAFA511_241016, 0990_BIOAFA512_241016, 0990_BIOAFA513_241016, 0990_BIOAFA514_241016, 0990_BIOAFA515_241016	**16-Oct-2024**	**18-Nov-2024**	14-Apr-2025	✓	**20-Nov-2024**	28-Dec-2024	✓

Matrix: **BIOTA**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids - Continued							
Snap Lock Bag (EP231-PFOS-SP) 0990_BIOAFA516_241016, 0990_BIOAFA517_241016, 0990_BIOAFA518_241016, 0990_BIOAFA519_241016, 0990_BIOAFA520_241016, 0990_BIOAFA521_241016, 0990_BIOAFA522_241016, 0990_BIOAFA523_241016, 0990_BIOAFA524_241016	**16-Oct-2024**	**19-Nov-2024**	14-Apr-2025	✓	**20-Nov-2024**	29-Dec-2024	✓
Snap Lock Bag (EP231X) 0990_BIOAFA516_241016, 0990_BIOAFA517_241016, 0990_BIOAFA518_241016, 0990_BIOAFA519_241016, 0990_BIOAFA520_241016, 0990_BIOAFA521_241016, 0990_BIOAFA522_241016, 0990_BIOAFA523_241016, 0990_BIOAFA524_241016	**16-Oct-2024**	**19-Nov-2024**	14-Apr-2025	✓	**21-Nov-2024**	29-Dec-2024	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
Snap Lock Bag (EP231X) 0990_BIOAFA485_241015, 0990_BIOAFA486_241015, 0990_BIOAFA487_241015, 0990_BIOAFA488_241015, 0990_BIOAFA489_241015, 0990_BIOAFA490_241015, 0990_BIOAFA491_241015, 0990_BIOAFA492_241015, 0990_BIOAFA493_241015, 0990_BIOAFA494_241015, 0990_BIOAFA495_241015, 0990_BIOAFA496_241015, 0990_BIOAFA497_241015, 0990_BIOAFA498_241015, 0990_BIOAFA499_241015, 0990_BIOAFA500_241015	**15-Oct-2024**	**15-Nov-2024**	13-Apr-2025	✓	**19-Nov-2024**	25-Dec-2024	✓
Snap Lock Bag (EP231X) 0990_QC157_241015, 0990_QC158_241015, 0990_QC159_241015, 0990_QC160_241015	**15-Oct-2024**	**19-Nov-2024**	13-Apr-2025	✓	**21-Nov-2024**	29-Dec-2024	✓
Snap Lock Bag (EP231X) 0990_BIOAFA501_241016, 0990_BIOAFA502_241016, 0990_BIOAFA503_241016, 0990_BIOAFA504_241016, 0990_BIOAFA505_241016, 0990_BIOAFA506_241016, 0990_BIOAFA507_241016, 0990_BIOAFA508_241016, 0990_BIOAFA509_241016, 0990_BIOAFA510_241016, 0990_BIOAFA511_241016, 0990_BIOAFA512_241016, 0990_BIOAFA513_241016, 0990_BIOAFA514_241016, 0990_BIOAFA515_241016	**16-Oct-2024**	**18-Nov-2024**	14-Apr-2025	✓	**20-Nov-2024**	28-Dec-2024	✓
Snap Lock Bag (EP231X) 0990_BIOAFA516_241016, 0990_BIOAFA517_241016, 0990_BIOAFA518_241016, 0990_BIOAFA519_241016, 0990_BIOAFA520_241016, 0990_BIOAFA521_241016, 0990_BIOAFA522_241016, 0990_BIOAFA523_241016, 0990_BIOAFA524_241016	**16-Oct-2024**	**19-Nov-2024**	14-Apr-2025	✓	**21-Nov-2024**	29-Dec-2024	✓

Matrix: **BIOTA**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides							
Snap Lock Bag (EP231X) 0990_BIOAFA485_241015, 0990_BIOAFA486_241015, 0990_BIOAFA487_241015, 0990_BIOAFA488_241015, 0990_BIOAFA489_241015, 0990_BIOAFA490_241015, 0990_BIOAFA491_241015, 0990_BIOAFA492_241015, 0990_BIOAFA493_241015, 0990_BIOAFA494_241015, 0990_BIOAFA495_241015, 0990_BIOAFA496_241015, 0990_BIOAFA497_241015, 0990_BIOAFA498_241015, 0990_BIOAFA499_241015, 0990_BIOAFA500_241015	**15-Oct-2024**	**15-Nov-2024**	13-Apr-2025	✓	**19-Nov-2024**	25-Dec-2024	✓
Snap Lock Bag (EP231X) 0990_QC157_241015, 0990_QC158_241015, 0990_QC159_241015, 0990_QC160_241015	**15-Oct-2024**	**19-Nov-2024**	13-Apr-2025	✓	**21-Nov-2024**	29-Dec-2024	✓
Snap Lock Bag (EP231X) 0990_BIOAFA501_241016, 0990_BIOAFA502_241016, 0990_BIOAFA503_241016, 0990_BIOAFA504_241016, 0990_BIOAFA505_241016, 0990_BIOAFA506_241016, 0990_BIOAFA507_241016, 0990_BIOAFA508_241016, 0990_BIOAFA509_241016, 0990_BIOAFA510_241016, 0990_BIOAFA511_241016, 0990_BIOAFA512_241016, 0990_BIOAFA513_241016, 0990_BIOAFA514_241016, 0990_BIOAFA515_241016	**16-Oct-2024**	**18-Nov-2024**	14-Apr-2025	✓	**20-Nov-2024**	28-Dec-2024	✓
Snap Lock Bag (EP231X) 0990_BIOAFA516_241016, 0990_BIOAFA517_241016, 0990_BIOAFA518_241016, 0990_BIOAFA519_241016, 0990_BIOAFA520_241016, 0990_BIOAFA521_241016, 0990_BIOAFA522_241016, 0990_BIOAFA523_241016, 0990_BIOAFA524_241016	**16-Oct-2024**	**19-Nov-2024**	14-Apr-2025	✓	**21-Nov-2024**	29-Dec-2024	✓

Matrix: **BIOTA**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
Snap Lock Bag (EP231X) 0990_BIOAFA485_241015, 0990_BIOAFA486_241015, 0990_BIOAFA487_241015, 0990_BIOAFA488_241015, 0990_BIOAFA489_241015, 0990_BIOAFA490_241015, 0990_BIOAFA491_241015, 0990_BIOAFA492_241015, 0990_BIOAFA493_241015, 0990_BIOAFA494_241015, 0990_BIOAFA495_241015, 0990_BIOAFA496_241015, 0990_BIOAFA497_241015, 0990_BIOAFA498_241015, 0990_BIOAFA499_241015, 0990_BIOAFA500_241015	**15-Oct-2024**	**15-Nov-2024**	13-Apr-2025	✓	**19-Nov-2024**	25-Dec-2024	✓
Snap Lock Bag (EP231X) 0990_QC157_241015, 0990_QC158_241015, 0990_QC159_241015, 0990_QC160_241015	**15-Oct-2024**	**19-Nov-2024**	13-Apr-2025	✓	**21-Nov-2024**	29-Dec-2024	✓
Snap Lock Bag (EP231X) 0990_BIOAFA501_241016, 0990_BIOAFA502_241016, 0990_BIOAFA503_241016, 0990_BIOAFA504_241016, 0990_BIOAFA505_241016, 0990_BIOAFA506_241016, 0990_BIOAFA507_241016, 0990_BIOAFA508_241016, 0990_BIOAFA509_241016, 0990_BIOAFA510_241016, 0990_BIOAFA511_241016, 0990_BIOAFA512_241016, 0990_BIOAFA513_241016, 0990_BIOAFA514_241016, 0990_BIOAFA515_241016	**16-Oct-2024**	**18-Nov-2024**	14-Apr-2025	✓	**20-Nov-2024**	28-Dec-2024	✓
Snap Lock Bag (EP231X) 0990_BIOAFA516_241016, 0990_BIOAFA517_241016, 0990_BIOAFA518_241016, 0990_BIOAFA519_241016, 0990_BIOAFA520_241016, 0990_BIOAFA521_241016, 0990_BIOAFA522_241016, 0990_BIOAFA523_241016, 0990_BIOAFA524_241016	**16-Oct-2024**	**19-Nov-2024**	14-Apr-2025	✓	**21-Nov-2024**	29-Dec-2024	✓

Matrix: **BIOTA**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums							
Snap Lock Bag (EP231X) 0990_BIOAFA485_241015, 0990_BIOAFA486_241015, 0990_BIOAFA487_241015, 0990_BIOAFA488_241015, 0990_BIOAFA489_241015, 0990_BIOAFA490_241015, 0990_BIOAFA491_241015, 0990_BIOAFA492_241015, 0990_BIOAFA493_241015, 0990_BIOAFA494_241015, 0990_BIOAFA495_241015, 0990_BIOAFA496_241015, 0990_BIOAFA497_241015, 0990_BIOAFA498_241015, 0990_BIOAFA499_241015, 0990_BIOAFA500_241015	**15-Oct-2024**	**15-Nov-2024**	13-Apr-2025	✓	**19-Nov-2024**	25-Dec-2024	✓
Snap Lock Bag (EP231X) 0990_QC157_241015, 0990_QC158_241015, 0990_QC159_241015, 0990_QC160_241015	**15-Oct-2024**	**19-Nov-2024**	13-Apr-2025	✓	**21-Nov-2024**	29-Dec-2024	✓
Snap Lock Bag (EP231X) 0990_BIOAFA501_241016, 0990_BIOAFA502_241016, 0990_BIOAFA503_241016, 0990_BIOAFA504_241016, 0990_BIOAFA505_241016, 0990_BIOAFA506_241016, 0990_BIOAFA507_241016, 0990_BIOAFA508_241016, 0990_BIOAFA509_241016, 0990_BIOAFA510_241016, 0990_BIOAFA511_241016, 0990_BIOAFA512_241016, 0990_BIOAFA513_241016, 0990_BIOAFA514_241016, 0990_BIOAFA515_241016	**16-Oct-2024**	**18-Nov-2024**	14-Apr-2025	✓	**20-Nov-2024**	28-Dec-2024	✓
Snap Lock Bag (EP231X) 0990_BIOAFA516_241016, 0990_BIOAFA517_241016, 0990_BIOAFA518_241016, 0990_BIOAFA519_241016, 0990_BIOAFA520_241016, 0990_BIOAFA521_241016, 0990_BIOAFA522_241016, 0990_BIOAFA523_241016, 0990_BIOAFA524_241016	**16-Oct-2024**	**19-Nov-2024**	14-Apr-2025	✓	**21-Nov-2024**	29-Dec-2024	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_QC401_241015	**15-Oct-2024**	**18-Nov-2024**	13-Apr-2025	✓	**20-Nov-2024**	13-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC156_241016, 0990_QC402_241016	**16-Oct-2024**	**18-Nov-2024**	14-Apr-2025	✓	**20-Nov-2024**	14-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW151_241016	**16-Oct-2024**	**19-Nov-2024**	14-Apr-2025	✓	**20-Nov-2024**	14-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC308_241017, 0990_QC309_241017	**17-Oct-2024**	**18-Nov-2024**	15-Apr-2025	✓	**20-Nov-2024**	15-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC507_241017, 0990_QC508_241017	**17-Oct-2024**	**19-Nov-2024**	15-Apr-2025	✓	**20-Nov-2024**	15-Apr-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_QC401_241015	15-Oct-2024	18-Nov-2024	13-Apr-2025	✓	20-Nov-2024	13-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC156_241016, 0990_QC402_241016	16-Oct-2024	18-Nov-2024	14-Apr-2025	✓	20-Nov-2024	14-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW151_241016	16-Oct-2024	19-Nov-2024	14-Apr-2025	✓	20-Nov-2024	14-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC308_241017, 0990_QC309_241017	17-Oct-2024	18-Nov-2024	15-Apr-2025	✓	20-Nov-2024	15-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC507_241017, 0990_QC508_241017	17-Oct-2024	19-Nov-2024	15-Apr-2025	✓	20-Nov-2024	15-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_QC401_241015	15-Oct-2024	18-Nov-2024	13-Apr-2025	✓	20-Nov-2024	13-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC156_241016, 0990_QC402_241016	16-Oct-2024	18-Nov-2024	14-Apr-2025	✓	20-Nov-2024	14-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW151_241016	16-Oct-2024	19-Nov-2024	14-Apr-2025	✓	20-Nov-2024	14-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC308_241017, 0990_QC309_241017	17-Oct-2024	18-Nov-2024	15-Apr-2025	✓	20-Nov-2024	15-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC507_241017, 0990_QC508_241017	17-Oct-2024	19-Nov-2024	15-Apr-2025	✓	20-Nov-2024	15-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_QC401_241015	15-Oct-2024	18-Nov-2024	13-Apr-2025	✓	20-Nov-2024	13-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC156_241016, 0990_QC402_241016	16-Oct-2024	18-Nov-2024	14-Apr-2025	✓	20-Nov-2024	14-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW151_241016	16-Oct-2024	19-Nov-2024	14-Apr-2025	✓	20-Nov-2024	14-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC308_241017, 0990_QC309_241017	17-Oct-2024	18-Nov-2024	15-Apr-2025	✓	20-Nov-2024	15-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC507_241017, 0990_QC508_241017	17-Oct-2024	19-Nov-2024	15-Apr-2025	✓	20-Nov-2024	15-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_QC401_241015	15-Oct-2024	18-Nov-2024	13-Apr-2025	✓	20-Nov-2024	13-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC156_241016, 0990_QC402_241016	16-Oct-2024	18-Nov-2024	14-Apr-2025	✓	20-Nov-2024	14-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW151_241016	16-Oct-2024	19-Nov-2024	14-Apr-2025	✓	20-Nov-2024	14-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC308_241017, 0990_QC309_241017	17-Oct-2024	18-Nov-2024	15-Apr-2025	✓	20-Nov-2024	15-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC507_241017, 0990_QC508_241017	17-Oct-2024	19-Nov-2024	15-Apr-2025	✓	20-Nov-2024	15-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **BIOTA**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	6	44	**13.64**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	44	**6.82**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	44	**6.82**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	44	**6.82**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	4	35	**11.43**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	35	**5.71**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	35	**5.71**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	35	**5.71**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
PFOS - Linear/Branched Speciation	EP231-PFOS-SP	BIOTA	In-house: Linear PFOS is determined by quantiation of the separate linear peak using linear PFOS. Branched PFOS is determined as the difference between total PFOS (determined using a mixed linear/branched standard) and linear PFOS.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	BIOTA	In-house: A sample extract is analysed by LC-Electrospray-MS-MS, Negative Mode using MRM using internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of biota which is then solvent extracted. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Prep-Preparation for Biota Analysis	* Biota-PP	BIOTA	A sample is prepared from whole or particular tissues/organs, identified, homogenised and the total weight of prepared sample recorded.
Sample Preparation for PFAS in Biota	EP231-PR	BIOTA	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to a portion of homogenised biota which is then extracted with MTBE and an ion pairing reagent. A portion of extract is exchanged into the analytical solvent mixture, combined with an equal volume reagent water and filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

Australian Government
Department of Industry, Science and Resources

National Measurement Institute

NATA

REPORT OF ANALYSIS

Report No. RN1449010

Client	: AECOM SERVICES PTY LTD	**Job No.**	: AECO09/241031
	[redacted]	**Quote No.**	: QT-02294
	[redacted]	**Order No.**	: 60676801/70301
		Date Sampled	: 15-OCT-2024
		Date Received	: 31-OCT-2024
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: NT_0990_PFASOMP_24		
Your Client Services Manager	: [redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N24/022156	0990_QC207_241015	BIOTA 15 OCT 2024
N24/022157	0990_QC208_241015	BIOTA 15 OCT 2024

Lab Reg No.		N24/022156	N24/022157	
Sample Reference	Units	0990_QC207_241015	0990_QC208_241015	Method
PFAS (per-and poly-fluoroalkyl substances)				
PFBA (375-22-4)	mg/kg	<0.005	<0.005	AUTL07
PFPeA (2706-90-3)	mg/kg	<0.0005	<0.0005	AUTL07
PFHxA (307-24-4)	mg/kg	<0.0005	<0.0005	AUTL07
PFHpA (375-85-9)	mg/kg	<0.0005	<0.0005	AUTL07
PFOA (335-67-1)	mg/kg	<0.0003	<0.0003	AUTL07
PFNA (375-95-1)	mg/kg	<0.0005	<0.0005	AUTL07
PFDA (335-76-2)	mg/kg	<0.0005	<0.0005	AUTL07
PFUnDA (2058-94-8)	mg/kg	<0.0005	<0.0005	AUTL07
PFDoDA (307-55-1)	mg/kg	<0.0005	<0.0005	AUTL07
PFTrDA (72629-94-8)	mg/kg	<0.0005	<0.0005	AUTL07
PFTeDA (376-06-7)	mg/kg	<0.0005	<0.0005	AUTL07
PFBS (375-73-5)	mg/kg	<0.0005	<0.0005	AUTL07
PFPeS (2706-91-4)	mg/kg	<0.0005	<0.0005	AUTL07
PFHxS (355-46-4)	mg/kg	<0.0005	<0.0005	AUTL07
PFHpS (375-92-8)	mg/kg	<0.0005	<0.0005	AUTL07
PFOS (1763-23-1)	mg/kg	0.014	0.012	AUTL07
PFNS (68259-12-1)	mg/kg	<0.0005	<0.0005	AUTL07
PFDS (335-77-3)	mg/kg	<0.0005	<0.0005	AUTL07
PFOSA (754-91-6)	mg/kg	<0.0005	<0.0005	AUTL07
N-MeFOSAA (2355-31-9)	mg/kg	<0.0005	<0.0005	AUTL07
N-EtFOSAA(2991-50-6)	mg/kg	<0.0005	<0.0005	AUTL07
4:2 FTS (757124-72-4)	mg/kg	<0.001	<0.001	AUTL07
6:2 FTS (27619-97-2)	mg/kg	<0.0005	<0.0005	AUTL07
8:2 FTS (39108-34-4)	mg/kg	<0.0005	<0.0005	AUTL07
10:2 FTS (120226-60-0)	mg/kg	<0.001	<0.001	AUTL07
PFBA (Surrogate Recovery)	%	88	82	AUTL07
PFPeA (Surrogate Recovery)	%	94	93	AUTL07
PFHxA (Surrogate Recovery)	%	88	86	AUTL07
PFHpA (Surrogate Recovery)	%	81	86	AUTL07

REPORT OF ANALYSIS

Report No. RN1449010

Lab Reg No.	Units	N24/022156	N24/022157	Method
Sample Reference		0990_QC207_241015	0990_QC208_241015	
PFAS (per-and poly-fluoroalkyl substances)				
PFOA (Surrogate Recovery)	%	85	76	AUTL07
PFNA (Surrogate Recovery)	%	92	87	AUTL07
PFDA (Surrogate Recovery)	%	87	83	AUTL07
PFUnDA (Surrogate Recovery)	%	73	69	AUTL07
PFDoDA (Surrogate Recovery)	%	61	60	AUTL07
PFTeDA (Surrogate Recovery)	%	48	45	AUTL07
PFBS (Surrogate Recovery)	%	98	87	AUTL07
PFHxS (Surrogate Recovery)	%	89	83	AUTL07
PFOS (Surrogate Recovery)	%	97	85	AUTL07
PFOSA (Surrogate Recovery)	%	97	87	AUTL07
N-MeFOSAA (Surrogate Recovery)	%	67	67	AUTL07
N-EtFOSAA (Surrogate Recovery)	%	75	75	AUTL07
4:2 FTS (Surrogate Recovery)	%	52	45	AUTL07
6:2 FTS (Surrogate Recovery)	%	58	47	AUTL07
8:2 FTS (Surrogate Recovery)	%	62	52	AUTL07
Date Extracted		21-NOV-2024	21-NOV-2024	AUTL07
Date Analysed		27-NOV-2024	27-NOV-2024	AUTL07

N24/022156
PFAS in biota is not NATA accredited.
Internal standard recoveries are outside the acceptable range of 50-150%
due to matrix interference for: PFTeDA

N24/022157
PFAS in biota is not NATA accredited.
Internal standard recoveries are outside the acceptable range of 50-150%
due to matrix interference for: PFTeDA, 4:2 FTS, 6:2 FTS

[redacted]

02-DEC-2024

REPORT OF ANALYSIS

Report No. RN1449010

Client	: AECOM SERVICES PTY LTD	**Job No.**	: AECO09/241031
	[redacted]	**Quote No.**	: QT-02294
	[redacted]	**Order No.**	: 60676801/70301
		Date Sampled	: 16-OCT-2024
		Date Received	: 31-OCT-2024
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: NT_0990_PFASOMP_24		
Your Client Services Manager	: [redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N24/022158	0990_QC209_241016	BIOTA 16 OCT 2024
N24/022159	0990_QC210_241016	BIOTA 16 OCT 2024

Lab Reg No.		N24/022158	N24/022159	
Sample Reference	Units	0990_QC209_241016	0990_QC210_241016	Method
PFAS (per-and poly-fluoroalkyl substances)				
PFBA (375-22-4)	mg/kg	<0.005	<0.005	AUTL07
PFPeA (2706-90-3)	mg/kg	<0.0005	<0.0005	AUTL07
PFHxA (307-24-4)	mg/kg	<0.0005	<0.0005	AUTL07
PFHpA (375-85-9)	mg/kg	<0.0005	<0.0005	AUTL07
PFOA (335-67-1)	mg/kg	<0.0003	<0.0003	AUTL07
PFNA (375-95-1)	mg/kg	<0.0005	<0.0005	AUTL07
PFDA (335-76-2)	mg/kg	<0.0005	<0.0005	AUTL07
PFUnDA (2058-94-8)	mg/kg	<0.0005	<0.0005	AUTL07
PFDoDA (307-55-1)	mg/kg	<0.0005	<0.0005	AUTL07
PFTrDA (72629-94-8)	mg/kg	<0.0005	<0.0005	AUTL07
PFTeDA (376-06-7)	mg/kg	<0.0005	<0.0005	AUTL07
PFBS (375-73-5)	mg/kg	<0.0005	<0.0005	AUTL07
PFPeS (2706-91-4)	mg/kg	<0.0005	<0.0005	AUTL07
PFHxS (355-46-4)	mg/kg	<0.0005	<0.0005	AUTL07
PFHpS (375-92-8)	mg/kg	<0.0005	<0.0005	AUTL07
PFOS (1763-23-1)	mg/kg	0.018	0.014	AUTL07
PFNS (68259-12-1)	mg/kg	<0.0005	<0.0005	AUTL07
PFDS (335-77-3)	mg/kg	<0.0005	<0.0005	AUTL07
PFOSA (754-91-6)	mg/kg	<0.0005	<0.0005	AUTL07
N-MeFOSAA (2355-31-9)	mg/kg	<0.0005	<0.0005	AUTL07
N-EtFOSAA(2991-50-6)	mg/kg	<0.0005	<0.0005	AUTL07
4:2 FTS (757124-72-4)	mg/kg	<0.001	<0.001	AUTL07
6:2 FTS (27619-97-2)	mg/kg	<0.0005	<0.0005	AUTL07
8:2 FTS (39108-34-4)	mg/kg	<0.0005	<0.0005	AUTL07
10:2 FTS (120226-60-0)	mg/kg	<0.001	<0.001	AUTL07
PFBA (Surrogate Recovery)	%	84	75	AUTL07
PFPeA (Surrogate Recovery)	%	89	80	AUTL07
PFHxA (Surrogate Recovery)	%	83	71	AUTL07
PFHpA (Surrogate Recovery)	%	83	74	AUTL07

REPORT OF ANALYSIS

Report No. RN1449010

Lab Reg No.	Units	N24/022158	N24/022159	Method
Sample Reference		0990_QC209_241016	0990_QC210_241016	
PFAS (per-and poly-fluoroalkyl substances)				
PFOA (Surrogate Recovery)	%	81	76	AUTL07
PFNA (Surrogate Recovery)	%	88	79	AUTL07
PFDA (Surrogate Recovery)	%	81	68	AUTL07
PFUnDA (Surrogate Recovery)	%	70	65	AUTL07
PFDoDA (Surrogate Recovery)	%	60	56	AUTL07
PFTeDA (Surrogate Recovery)	%	46	43	AUTL07
PFBS (Surrogate Recovery)	%	89	81	AUTL07
PFHxS (Surrogate Recovery)	%	81	70	AUTL07
PFOS (Surrogate Recovery)	%	87	80	AUTL07
PFOSA (Surrogate Recovery)	%	91	84	AUTL07
N-MeFOSAA (Surrogate Recovery)	%	70	66	AUTL07
N-EtFOSAA (Surrogate Recovery)	%	72	61	AUTL07
4:2 FTS (Surrogate Recovery)	%	47	45	AUTL07
6:2 FTS (Surrogate Recovery)	%	53	50	AUTL07
8:2 FTS (Surrogate Recovery)	%	56	53	AUTL07
Date Extracted		21-NOV-2024	21-NOV-2024	AUTL07
Date Analysed		27-NOV-2024	27-NOV-2024	AUTL07

N24/022158
PFAS in biota is not NATA accredited.
Internal standard recoveries are outside the acceptable range of 50-150%
due to matrix interference for: PFTeDA, 4:2 FTS

N24/022159
PFAS in biota is not NATA accredited.
Internal standard recoveries are outside the acceptable range of 50-150%
due to matrix interference for: PFTeDA, 4:2 FTS, 6:2 FTS

[redacted]

02-DEC-2024

REPORT OF ANALYSIS

All results are reported on a wet weight basis as received, and are corrected for labelled internal standard recoveries.

PFHxS and PFOS were quantified using combined branched and linear standards, for all PFAS linear and branched isomers in samples are totalled for reporting.

NATA
WORLD RECOGNISED
ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

* Denotes the analyte or test method is not within our ISO/IEC 17025 scope of accreditation.

Measurement Uncertainty is available upon request.
The testing was undertaken at: [redacted]

Australian Government
National Measurement Institute

PFAS Quality Assurance Report

Lab Blank	11670
Blank concentration	mg/kg
PFBA (375-22-4)	<0.0001
PFPeA (2706-90-3)	<0.0001
PFHxA (307-24-4)	<0.0001
PFHpA (375-85-9)	<0.00005
PFOA (335-67-1)	<0.00005
PFNA (375-95-1)	<0.00005
PFDA (335-76-2)	<0.00005
PFUnDA (2058-94-8)	<0.00005
PFDoDA (307-55-1)	<0.00005
PFTrDA (72629-94-8)	<0.00005
PFTeDA (376-06-7)	<0.0001
PFBS (375-73-5)	<0.00005
PFPeS (2706-91-4)	<0.00005
PFHxS (355-46-4)	<0.0001
PFHpS (375-92-8)	<0.0001
PFOS (1763-23-1)	<0.0001
PFNS (68259-12-1)	<0.0001
PFDS (335-77-3)	check
PFDoS (79780-39-5)	<0.0001
PFOSA (754-91-6)	<0.0001
N-MeFOSAA (2355-31-9)	<0.0001
N-EtFOSAA(2991-50-6)	<0.0001
4:2 FTS (757124-72-4)	<0.00005
6:2 FTS (27619-97-2)	<0.00005
8:2 FTS (39108-34-4)	<0.00005
10:2 FTS (120226-60-0)	<0.00005
Extracted Date	21/11/2024
LCMSMS Analysis Date	27/11/2024

Lab Control Spike	11670
Native Spike recovery	%
PFBA (375-22-4)	136%
PFPeA (2706-90-3)	122%
PFHxA (307-24-4)	143%
PFHpA (375-85-9)	135%
PFOA (335-67-1)	138%
PFNA (375-95-1)	137%
PFDA (335-76-2)	129%
PFUnDA (2058-94-8)	131%
PFDoDA (307-55-1)	130%
PFTrDA (72629-94-8)	115%
PFTeDA (376-06-7)	127%
PFBS (375-73-5)	122%
PFPeS (2706-91-4)	110%
PFHxS (355-46-4)	126%
PFHpS (375-92-8)	135%
PFOS (1763-23-1)	129%
PFNS (68259-12-1)	130%
PFDS (335-77-3)	125%
PFDoS (79780-39-5)	122%
PFOSA (754-91-6)	122%
N-MeFOSAA (2355-31-9)	126%
N-EtFOSAA(2991-50-6)	123%
4:2 FTS (757124-72-4)	136%
6:2 FTS (27619-97-2)	127%
8:2 FTS (39108-34-4)	131%
10:2 FTS (120226-60-0)	120%
Extracted Date	21/11/2024
LCMSMS Analysis Date	27/11/2024

[redacted]

Australian Government
National Measurement Institute

PFAS Quality Assurance Report

Duplicate sample A	11670
Fish flesh	
Relative Percentage Deviation %	
PFBA (375-22-4)	<LOR
PFPeA (2706-90-3)	<LOR
PFHxA (307-24-4)	<LOR
PFHpA (375-85-9)	<LOR
PFOA (335-67-1)	<LOR
PFNA (375-95-1)	<LOR
PFDA (335-76-2)	<LOR
PFUnDA (2058-94-8)	<LOR
PFDoDA (307-55-1)	<LOR
PFTrDA (72629-94-8)	<LOR
PFTeDA (376-06-7)	<LOR
PFBS (375-73-5)	<LOR
PFPeS (2706-91-4)	<LOR
PFHxS (355-46-4)	<LOR
PFHpS (375-92-8)	<LOR
PFOS (1763-23-1)	2%
PFNS (68259-12-1)	<LOR
PFDS (335-77-3)	<LOR
PFDoS (79780-39-5)	<LOR
PFOSA (754-91-6)	<LOR
N-MeFOSAA (2355-31-9)	<LOR
N-EtFOSAA(2991-50-6)	<LOR
4:2 FTS (757124-72-4)	<LOR
6:2 FTS (27619-97-2)	<LOR
8:2 FTS (39108-34-4)	<LOR
10:2 FTS (120226-60-0)	<LOR
Extracted Date	21/11/2024
LCMSMS Analysis Date	27/11/2024

Duplicate sample B	11670
Fish flesh	
Relative Percentage Deviation %	
PFBA (375-22-4)	<LOR
PFPeA (2706-90-3)	<LOR
PFHxA (307-24-4)	<LOR
PFHpA (375-85-9)	<LOR
PFOA (335-67-1)	<LOR
PFNA (375-95-1)	<LOR
PFDA (335-76-2)	<LOR
PFUnDA (2058-94-8)	<LOR
PFDoDA (307-55-1)	<LOR
PFTrDA (72629-94-8)	<LOR
PFTeDA (376-06-7)	<LOR
PFBS (375-73-5)	<LOR
PFPeS (2706-91-4)	<LOR
PFHxS (355-46-4)	<LOR
PFHpS (375-92-8)	<LOR
PFOS (1763-23-1)	1%
PFNS (68259-12-1)	<LOR
PFDS (335-77-3)	<LOR
PFDoS (79780-39-5)	<LOR
PFOSA (754-91-6)	<LOR
N-MeFOSAA (2355-31-9)	<LOR
N-EtFOSAA(2991-50-6)	<LOR
4:2 FTS (757124-72-4)	<LOR
6:2 FTS (27619-97-2)	<LOR
8:2 FTS (39108-34-4)	<LOR
10:2 FTS (120226-60-0)	<LOR
Extracted Date	21/11/2024
LCMSMS Analysis Date	27/11/2024

[redacted]

PFAS Quality Assurance Report

Spiked sample C	11670
Fish flesh	
Native Spike recovery	%
PFBA (375-22-4)	133%
PFPeA (2706-90-3)	131%
PFHxA (307-24-4)	131%
PFHpA (375-85-9)	132%
PFOA (335-67-1)	121%
PFNA (375-95-1)	128%
PFDA (335-76-2)	131%
PFUnDA (2058-94-8)	140%
PFDoDA (307-55-1)	124%
PFTrDA (72629-94-8)	116%
PFTeDA (376-06-7)	130%
PFBS (375-73-5)	127%
PFPeS (2706-91-4)	99%
PFHxS (355-46-4)	131%
PFHpS (375-92-8)	124%
PFOS (1763-23-1)	111%
PFNS (68259-12-1)	121%
PFDS (335-77-3)	107%
PFDoS (79780-39-5)	94%
PFOSA (754-91-6)	125%
N-MeFOSAA (2355-31-9)	137%
N-EtFOSAA(2991-50-6)	116%
4:2 FTS (757124-72-4)	124%
6:2 FTS (27619-97-2)	130%
8:2 FTS (39108-34-4)	135%
10:2 FTS (120226-60-0)	106%
Extracted Date	21/11/2024
LCMSMS Analysis Date	27/11/2024

Spiked sample D	11670
Fish flesh	
Native Spike recovery	%
PFBA (375-22-4)	134%
PFPeA (2706-90-3)	136%
PFHxA (307-24-4)	121%
PFHpA (375-85-9)	138%
PFOA (335-67-1)	131%
PFNA (375-95-1)	135%
PFDA (335-76-2)	136%
PFUnDA (2058-94-8)	138%
PFDoDA (307-55-1)	119%
PFTrDA (72629-94-8)	117%
PFTeDA (376-06-7)	124%
PFBS (375-73-5)	120%
PFPeS (2706-91-4)	95%
PFHxS (355-46-4)	125%
PFHpS (375-92-8)	119%
PFOS (1763-23-1)	93%
PFNS (68259-12-1)	125%
PFDS (335-77-3)	105%
PFDoS (79780-39-5)	90%
PFOSA (754-91-6)	120%
N-MeFOSAA (2355-31-9)	126%
N-EtFOSAA(2991-50-6)	117%
4:2 FTS (757124-72-4)	129%
6:2 FTS (27619-97-2)	125%
8:2 FTS (39108-34-4)	141%
10:2 FTS (120226-60-0)	92%
Extracted Date	21/11/2024
LCMSMS Analysis Date	27/11/2024

[redacted]

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2435723**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73719	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Biannual SW		
Sampler	: [redacted]		

Dates

Date Samples Received	: 05-Nov-2024 11:00	Issue Date	: 05-Nov-2024
Client Requested Due Date	: 11-Nov-2024	Scheduled Reporting Date	: **11-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 9.3'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 8 / 8

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample 0990_QC201_241101 has been forwarded to ALS Brisbane.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

ES2435723-008 : 01-Nov-2024 14:30 : 0990_QC301_241101 - Rinsate
ES2435723-009 : 01-Nov-2024 14:30 : 0990_QC401_241101 - Field blank

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2435723-001	01-Nov-2024 09:30	0990_SW161_221101	✓
ES2435723-002	30-Oct-2024 16:30	0990_SW110_241030	✓
ES2435723-003	30-Oct-2024 16:00	0990_SW100_241030	✓
ES2435723-004	30-Oct-2024 15:30	0990_SW108_241030	✓
ES2435723-005	30-Oct-2024 15:50	0990_SW153_241030	✓
ES2435723-006	04-Nov-2024 09:41	0990_QC101_241101	✓
ES2435723-008	01-Nov-2024 14:30	0990_QC301_241101 R...	✓
ES2435723-009	01-Nov-2024 14:30	0990_QC401_241101 F...	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

A[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2435723**	Page	: 1 of 11
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 06-Nov-2024
C-O-C number	: 73719	Issue Date	: 11-Nov-2024 14:32
Sampler	: [redacted]		
Site	: Biannual SW		
Quote number	: ----		
No. of samples received	: 8		
No. of samples analysed	: 8		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_SW161_221101	0990_SW110_241030	0990_SW100_241030	0990_SW108_241030	0990_SW153_241030
			Sampling date / time	01-Nov-2024 09:30	30-Oct-2024 16:30	30-Oct-2024 16:00	30-Oct-2024 15:30	30-Oct-2024 15:50
Compound	CAS Number	LOR	Unit	ES2435723-001	ES2435723-002	ES2435723-003	ES2435723-004	ES2435723-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	**0.11**	**0.09**	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	**0.16**	**0.12**	**0.02**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_SW161_221101	0990_SW110_241030	0990_SW100_241030	0990_SW108_241030	0990_SW153_241030
			Sampling date / time	01-Nov-2024 09:30	30-Oct-2024 16:30	30-Oct-2024 16:00	30-Oct-2024 15:30	30-Oct-2024 15:50
Compound	CAS Number	LOR	Unit	ES2435723-001	ES2435723-002	ES2435723-003	ES2435723-004	ES2435723-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	**0.27**	**0.21**	**0.02**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	**0.27**	**0.21**	**0.02**
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	**0.27**	**0.21**	**0.02**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**103**	**99.1**	**108**	**96.0**	**98.4**
13C8-PFOA	----	0.02	%	**99.7**	**104**	**99.2**	**92.5**	**93.0**

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_QC101_241101	----	----	----	----
			Sampling date / time	04-Nov-2024 09:41	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2435723-006	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_QC101_241101	----	----	----	----
			Sampling date / time	04-Nov-2024 09:41	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2435723-006	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**95.9**	----	----	----	----
13C8-PFOA	----	0.02	%	**94.2**	----	----	----	----

Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)			Sample ID	0990_QC301_241101 Rinsate	----	----	----	----
			Sampling date / time	01-Nov-2024 14:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2435723-008	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: RINSATE (Matrix: WATER)			Sample ID	0990_QC301_241101 Rinsate	----	----	----	----
			Sampling date / time	01-Nov-2024 14:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2435723-008	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**96.8**	----	----	----	----
13C8-PFOA	----	0.02	%	**93.9**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC401_241101 Field blank	----	----	----	----
			Sampling date / time	01-Nov-2024 14:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2435723-009	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC401_241101 Field blank	----	----	----	----
			Sampling date / time	01-Nov-2024 14:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2435723-009	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**96.8**	----	----	----	----
13C8-PFOA	----	0.02	%	**95.6**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: RINSATE		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2435723**	Page	: 1 of 8
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 06-Nov-2024
C-O-C number	: 73719	Issue Date	: 11-Nov-2024
Sampler	: [redacted]		
Site	: Biannual SW		
Quote number	: ----		
No. of samples received	: 8		
No. of samples analysed	: 8		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6167405)									
ES2435541-107	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2435541-108	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6167405)									
ES2435541-107	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6167405) - continued									
ES2435541-107	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2435541-108	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6167405)									
ES2435541-107	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2435541-108	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6167405)									
ES2435541-107	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2435541-108	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6167405)									
ES2435541-107	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2435541-108	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6167405)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	77.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	91.5	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	81.7	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	101	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	87.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.5	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6168076)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	82.1	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	98.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	88.7	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	91.7	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	78.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6167405)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	84.5	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.3	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	79.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	84.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	87.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	95.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	91.2	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.0	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.5	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	102	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6168076)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	94.6	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	98.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.0	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6168076) - continued								
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	104	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	108	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	125	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	109	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6167405)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	88.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	99.5	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	83.8	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.6	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	100	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	104	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	90.6	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6168076)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	91.9	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	119	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	104	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	105	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	112	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	82.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6167405)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	89.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	79.2	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	83.2	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	77.1	71.4	144

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6168076)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	90.7	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	99.0	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	114	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	101	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6167405)							
ES2435541-107	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	76.5	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	90.1	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	80.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	102	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	87.7	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	77.3	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6167405)							
ES2435541-107	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	83.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	90.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	84.4	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	84.8	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	86.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	96.3	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	96.2	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84.0	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	98.5	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	90.6	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	96.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6167405)							
ES2435541-107	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	89.2	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	96.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	91.3	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	89.2	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6167405) - continued							
ES2435541-107	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	96.0	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	99.6	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6167405)							
ES2435541-107	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	76.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	75.9	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	78.5	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	76.6	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2435723**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	[redacted]
Contact	: [redacted]	[redacted]	[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024
Site	: Biannual SW	Issue Date	: 11-Nov-2024
Sampler	: [redacted]	No. of samples received	: 8
Order number	: 60676801/	No. of samples analysed	: 8

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	38	5.26	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	38	2.63	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X) 0990_SW161_221101		**01-Nov-2024**	**06-Nov-2024**	30-Apr-2025	✓	**07-Nov-2024**	30-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC301_241101 - Rinsate,	0990_QC401_241101 - Field blank	**01-Nov-2024**	**08-Nov-2024**	30-Apr-2025	✓	**11-Nov-2024**	30-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC101_241101		**04-Nov-2024**	**08-Nov-2024**	03-May-2025	✓	**11-Nov-2024**	03-May-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW110_241030,	0990_SW100_241030	**30-Oct-2024**	**06-Nov-2024**	28-Apr-2025	✓	**07-Nov-2024**	28-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW108_241030,	0990_SW153_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X) 0990_SW161_221101		**01-Nov-2024**	**06-Nov-2024**	30-Apr-2025	✓	**07-Nov-2024**	30-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC301_241101 - Rinsate,	0990_QC401_241101 - Field blank	**01-Nov-2024**	**08-Nov-2024**	30-Apr-2025	✓	**11-Nov-2024**	30-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC101_241101		**04-Nov-2024**	**08-Nov-2024**	03-May-2025	✓	**11-Nov-2024**	03-May-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW110_241030,	0990_SW100_241030	**30-Oct-2024**	**06-Nov-2024**	28-Apr-2025	✓	**07-Nov-2024**	28-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW108_241030,	0990_SW153_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X) 0990_SW161_221101		**01-Nov-2024**	**06-Nov-2024**	30-Apr-2025	✓	**07-Nov-2024**	30-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC301_241101 - Rinsate,	0990_QC401_241101 - Field blank	**01-Nov-2024**	**08-Nov-2024**	30-Apr-2025	✓	**11-Nov-2024**	30-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC101_241101		**04-Nov-2024**	**08-Nov-2024**	03-May-2025	✓	**11-Nov-2024**	03-May-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW110_241030,	0990_SW100_241030	**30-Oct-2024**	**06-Nov-2024**	28-Apr-2025	✓	**07-Nov-2024**	28-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW108_241030,	0990_SW153_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X) 0990_SW161_221101		**01-Nov-2024**	**06-Nov-2024**	30-Apr-2025	✓	**07-Nov-2024**	30-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC301_241101 - Rinsate,	0990_QC401_241101 - Field blank	**01-Nov-2024**	**08-Nov-2024**	30-Apr-2025	✓	**11-Nov-2024**	30-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC101_241101		**04-Nov-2024**	**08-Nov-2024**	03-May-2025	✓	**11-Nov-2024**	03-May-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW110_241030,	0990_SW100_241030	**30-Oct-2024**	**06-Nov-2024**	28-Apr-2025	✓	**07-Nov-2024**	28-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW108_241030,	0990_SW153_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X) 0990_SW161_221101		**01-Nov-2024**	**06-Nov-2024**	30-Apr-2025	✓	**07-Nov-2024**	30-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC301_241101 - Rinsate,	0990_QC401_241101 - Field blank	**01-Nov-2024**	**08-Nov-2024**	30-Apr-2025	✓	**11-Nov-2024**	30-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC101_241101		**04-Nov-2024**	**08-Nov-2024**	03-May-2025	✓	**11-Nov-2024**	03-May-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW110_241030,	0990_SW100_241030	**30-Oct-2024**	**06-Nov-2024**	28-Apr-2025	✓	**07-Nov-2024**	28-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW108_241030,	0990_SW153_241030	**30-Oct-2024**	**08-Nov-2024**	28-Apr-2025	✓	**11-Nov-2024**	28-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	38	**5.26**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	38	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	38	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	38	**2.63**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB2438417**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73719	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Biannual SW		
Sampler	: [redacted]		

Dates

Date Samples Received	: 07-Nov-2024 10:30	Issue Date	: 07-Nov-2024
Client Requested Due Date	: 14-Nov-2024	Scheduled Reporting Date	: **14-Nov-2024**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 12.2°C, 14.5°C, 21.6°C - Ice present
Receipt Detail	: ESKY LARGE	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Unless otherwise stated, analytical work for this work order will be conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818.
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
EB2438417-001	04-Nov-2024 11:12	0990_QC201_241101	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **EB2438417**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 07-Nov-2024 10:30
Order number	: 60676801/	Date Analysis Commenced	: 08-Nov-2024
C-O-C number	: 73719	Issue Date	: 14-Nov-2024 15:47
Sampler	: [redacted]		
Site	: Biannual SW		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC201_241101	----	----	----	----
			Sampling date / time	04-Nov-2024 11:12	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2438417-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC201_241101	----	----	----	----
			Sampling date / time	04-Nov-2024 11:12	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2438417-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**105**	----	----	----	----
13C8-PFOA	----	0.02	%	**108**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EB2438417**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	[redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 07-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 08-Nov-2024
C-O-C number	: 73719	Issue Date	: 14-Nov-2024
Sampler	: [redacted]		
Site	: Biannual SW		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6179772)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	74.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	77.0	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	70.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	78.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	72.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	75.3	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6179772)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	73.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	74.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	75.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	74.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	72.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	74.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	72.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	69.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	72.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	76.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	86.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6179772)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	67.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	68.8	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	64.3	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	68.5	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	64.9	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	70.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	78.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6179772)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6179772) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	65.3	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.2378 µg/L	71.1	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	82.3	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.241 µg/L	64.5	64.2	133

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2438417**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 07-Nov-2024
Site	: Biannual SW	Issue Date	: 14-Nov-2024
Sampler	[redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_QC201_241101	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_QC201_241101	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_QC201_241101	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_QC201_241101	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_QC201_241101	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2433854**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73695	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT112		
Sampler	: [redacted]		

Dates

Date Samples Received	: 22-Oct-2024 11:30	Issue Date	: 23-Oct-2024
Client Requested Due Date	: 28-Oct-2024	Scheduled Reporting Date	: **28-Oct-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 7.5'C DRW 5.7'C 10.7'C 7.7'C SYD - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2433854-001	15-Oct-2024 10:30	0990_POT112_241015	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

QUALITY CONTROL REPORT

Work Order	: **ES2433854**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73695	Issue Date	: 28-Oct-2024
Sampler	: [redacted]		
Site	: POT112		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]		Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140511)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	117	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	107	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	127	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	117	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	111	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140511)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	115	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	109	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	120	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	124	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	116	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	125	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140511)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	117	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	127	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	114	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	115	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	112	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140511)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140511) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	105	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	116	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	115	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	104	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

CERTIFICATE OF ANALYSIS

Work Order	: **ES2433854**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024 11:30
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73695	Issue Date	: 28-Oct-2024 11:14
Sampler	: [redacted]		
Site	: POT112		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]		Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_241015	----	----	----	----
			Sampling date / time	15-Oct-2024 10:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433854-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.04**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.14**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	**0.02**	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**0.06**	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_241015	----	----	----	----
			Sampling date / time	15-Oct-2024 10:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433854-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.26**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.18**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.26**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**99.6**	----	----	----	----
13C8-PFOA	----	0.02	%	**98.9**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2433854**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Site	: POT112	Issue Date	: 28-Oct-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT112_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT112_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT112_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT112_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT112_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2433850**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73705	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT129		
Sampler	: [redacted]		

Dates

Date Samples Received	: 22-Oct-2024 11:30	Issue Date	: 23-Oct-2024
Client Requested Due Date	: 28-Oct-2024	Scheduled Reporting Date	: **28-Oct-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 7.5'C DRW 5.7'C 10.7'C 7.7'C SYD - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2433850-001	15-Oct-2024 12:40	0990_POT129_241015	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2433850**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024 11:30
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73705	Issue Date	: 28-Oct-2024 11:14
Sampler	: [redacted]		
Site	: POT129		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]		Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT129_241015	----	----	----	----
			Sampling date / time	15-Oct-2024 12:40	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433850-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT129_241015	----	----	----	----
			Sampling date / time	15-Oct-2024 12:40	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433850-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**102**	----	----	----	----
13C8-PFOA	----	0.02	%	**95.5**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2433850**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73705	Issue Date	: 28-Oct-2024
Sampler	: [redacted]		
Site	: POT129		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]		Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140511)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	117	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	107	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	127	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	117	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	111	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140511)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	115	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	109	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	120	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	124	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	116	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	125	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140511)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	117	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	127	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	114	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	115	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	112	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140511)								

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140511) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	105	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	116	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	115	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	104	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2433850**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Site	: POT129	Issue Date	: 28-Oct-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT129_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT129_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT129_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT129_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT129_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2433845**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]		
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 74294	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT239		
Sampler	: [redacted] [redacted]		

Dates

Date Samples Received	: 22-Oct-2024 11:30	Issue Date	: 23-Oct-2024
Client Requested Due Date	: 28-Oct-2024	Scheduled Reporting Date	: **28-Oct-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 7.5'C DRW 5.7'C 10.7'C 7.7'C SYD - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2433845-001	15-Oct-2024 07:30	0990_POT239_241015	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2433845**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Site	: POT239	Issue Date	: 28-Oct-2024
Sampler	: [redacted], [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT239_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT239_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT239_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT239_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT239_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

QUALITY CONTROL REPORT

Work Order	: **ES2433845**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 74294	Issue Date	: 28-Oct-2024
Sampler	: [redacted], [redacted]		
Site	: POT239		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140511)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	117	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	107	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	127	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	117	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	111	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140511)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	115	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	109	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	120	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	124	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	116	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	125	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140511)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	117	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	127	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	114	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	115	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	112	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140511)								

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140511) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	105	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	116	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	115	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	104	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

CERTIFICATE OF ANALYSIS

Work Order	: **ES2433845**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----		
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024 11:30
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 74294	Issue Date	: 28-Oct-2024 11:13
Sampler	: [redacted]		
Site	: POT239		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]		Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT239_241015	----	----	----	----
			Sampling date / time	15-Oct-2024 07:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433845-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT239_241015	----	----	----	----
			Sampling date / time	15-Oct-2024 07:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433845-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**99.3**	----	----	----	----
13C8-PFOA	----	0.02	%	**98.6**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2433841**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: + [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73703	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT127		
Sampler	: [redacted]		

Dates

Date Samples Received	: 22-Oct-2024 11:30	Issue Date	: 23-Oct-2024
Client Requested Due Date	: 28-Oct-2024	Scheduled Reporting Date	: **28-Oct-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 7.5'C DRW 5.7'C 10.7'C 7.7'C SYD - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2433841-001	16-Oct-2024 16:10	0990_POT127_241016	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2433841**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024 11:30
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73703	Issue Date	: 28-Oct-2024 11:12
Sampler	: [redacted]		
Site	: POT127		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT127_241016	----	----	----	----
			Sampling date / time	16-Oct-2024 16:10	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433841-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT127_241016	----	----	----	----
			Sampling date / time	16-Oct-2024 16:10	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433841-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**91.8**	----	----	----	----
13C8-PFOA	----	0.02	%	**88.6**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2433841**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Site	: POT127	Issue Date	: 28-Oct-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT127_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT127_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT127_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT127_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT127_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

QUALITY CONTROL REPORT

Work Order	: **ES2433841**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73703	Issue Date	: 28-Oct-2024
Sampler	: [redacted]		
Site	: POT127		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6140847) - continued									
ES2434005-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2433932-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.05	0.05	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140847)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	115	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	118	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	107	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	128	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	109	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	101	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140847)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	119	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	106	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	115	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	124	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	81.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	109	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140847)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	119	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	111	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	106	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	94.4	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	117	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	108	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140847)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140847) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	118	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	128	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	127	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	93.0	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	104	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	119	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	109	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	127	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	115	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	112	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	115	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	113	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	108	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	112	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	117	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	130	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	123	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	128	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	114	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	95.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	110	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	117	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	115	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	112	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	98.1	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140847) - continued							
ES2433932-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	108	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	129	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	116	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	99.7	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	119	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	127	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	98.7	71.4	144

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2433837**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: + [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73693	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: OTH118		
Sampler	: [redacted] [redacted]		

Dates

Date Samples Received	: 22-Oct-2024 11:30	Issue Date	: 23-Oct-2024
Client Requested Due Date	: 28-Oct-2024	Scheduled Reporting Date	: **28-Oct-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 7.5'C DRW 5.7'C 10.7'C 7.7'C SYD - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2433837-001	16-Oct-2024 16:02	0990_OTH118_241016	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2433837**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024 11:30
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73693	Issue Date	: 28-Oct-2024 11:12
Sampler	: [redacted]		
Site	: OTH118		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_OTH118_241016	----	----	----	----
			Sampling date / time	16-Oct-2024 16:02	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433837-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_OTH118_241016	----	----	----	----
			Sampling date / time	16-Oct-2024 16:02	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433837-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**93.0**	----	----	----	----
13C8-PFOA	----	0.02	%	**100**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2433837**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73693	Issue Date	: 28-Oct-2024
Sampler	: [redacted]		
Site	: OTH118		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6140847) - continued									
ES2434005-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2433932-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.05	0.05	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140847)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	115	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	118	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	107	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	128	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	109	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	101	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140847)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	119	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	106	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	115	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	124	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	81.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	109	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140847)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	119	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	111	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	106	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	94.4	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	117	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	108	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140847)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140847) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	118	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	128	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	127	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	93.0	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	104	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	119	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	109	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	127	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	115	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	112	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	115	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	113	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	108	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	112	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	117	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	130	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	123	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	128	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	114	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	95.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	110	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	117	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	115	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	112	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	98.1	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140847) - continued							
ES2433932-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	108	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	129	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	116	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	99.7	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	119	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	127	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	98.7	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2433837**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Site	: OTH118	Issue Date	: 28-Oct-2024
Sampler	: [redacted], [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH118_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH118_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_OTH118_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH118_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_OTH118_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2435722**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: + [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73698	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT120		
Sampler	: [redacted]		

Dates

Date Samples Received	: 05-Nov-2024 11:00	Issue Date	: 05-Nov-2024
Client Requested Due Date	: 11-Nov-2024	Scheduled Reporting Date	: **11-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 2.7'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2435722-001	30-Oct-2024 14:10	0990_POT120_241030	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2435722**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 06-Nov-2024
C-O-C number	: 73698	Issue Date	: 10-Nov-2024 11:29
Sampler	: [redacted]		
Site	: POT120		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_POT120_241030	----	----	----	----
			Sampling date / time	30-Oct-2024 14:10	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2435722-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.02**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.03**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_POT120_241030	----	----	----	----
			Sampling date / time	30-Oct-2024 14:10	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2435722-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.05**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.05**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.05**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**101**	----	----	----	----
13C8-PFOA	----	0.02	%	**103**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2435722**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 06-Nov-2024
C-O-C number	: 73698	Issue Date	: 10-Nov-2024
Sampler	: [redacted]		
Site	: POT120		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6167405)									
ES2435541-107	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2435541-108	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6167405)									
ES2435541-107	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6167405) - continued									
ES2435541-107	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2435541-108	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6167405)									
ES2435541-107	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2435541-108	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6167405)									
ES2435541-107	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2435541-108	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6167405)									
ES2435541-107	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2435541-108	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6167405)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	77.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	91.5	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	81.7	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	101	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	87.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.5	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6167405)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	84.5	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.3	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	79.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	84.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	87.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	95.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	91.2	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.0	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.5	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	102	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6167405)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	88.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	99.5	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	83.8	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.6	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	100	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	104	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	90.6	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6167405)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6167405) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	89.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	79.2	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	83.2	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	77.1	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6167405)							
ES2435541-107	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	76.5	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	90.1	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	80.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	102	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	87.7	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	77.3	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6167405)							
ES2435541-107	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	83.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	90.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	84.4	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	84.8	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	86.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	96.3	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	96.2	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84.0	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	98.5	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	90.6	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	96.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6167405)							
ES2435541-107	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	89.2	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	96.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	91.3	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	89.2	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6167405) - continued							
ES2435541-107	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	96.0	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	99.6	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6167405)							
ES2435541-107	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	76.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	75.9	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	78.5	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	76.6	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2435722**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024
Site	: POT120	Issue Date	: 10-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT120_241030	**30-Oct-2024**	**06-Nov-2024**	28-Apr-2025	✓	**07-Nov-2024**	28-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT120_241030	**30-Oct-2024**	**06-Nov-2024**	28-Apr-2025	✓	**07-Nov-2024**	28-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT120_241030	**30-Oct-2024**	**06-Nov-2024**	28-Apr-2025	✓	**07-Nov-2024**	28-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT120_241030	**30-Oct-2024**	**06-Nov-2024**	28-Apr-2025	✓	**07-Nov-2024**	28-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT120_241030	**30-Oct-2024**	**06-Nov-2024**	28-Apr-2025	✓	**07-Nov-2024**	28-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2433853**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: + [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73694	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: OTH119		
Sampler	: [redacted]		

Dates

Date Samples Received	: 22-Oct-2024 11:30	Issue Date	: 23-Oct-2024
Client Requested Due Date	: 28-Oct-2024	Scheduled Reporting Date	: **28-Oct-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 7.5'C DRW 5.7'C 10.7'C 7.7'C SYD - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2433853-001	15-Oct-2024 13:03	0990_OTH119_241015	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

QUALITY CONTROL REPORT

Work Order	: **ES2433853**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73694	Issue Date	: 28-Oct-2024
Sampler	: [redacted]		
Site	: OTH119		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140511)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	117	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	107	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	127	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	117	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	111	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140511)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	115	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	109	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	120	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	124	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	116	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	125	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140511)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	117	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	127	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	114	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	115	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	112	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140511)								

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140511) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	105	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	116	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	115	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	104	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

CERTIFICATE OF ANALYSIS

Work Order	: **ES2433853**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024 11:30
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73694	Issue Date	: 28-Oct-2024 11:14
Sampler	: [redacted]		
Site	: OTH119		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_OTH119_241015	----	----	----	----
			Sampling date / time	15-Oct-2024 13:03	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433853-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_OTH119_241015	----	----	----	----
			Sampling date / time	15-Oct-2024 13:03	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433853-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**103**	----	----	----	----
13C8-PFOA	----	0.02	%	**94.8**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2433853**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Site	: OTH119	Issue Date	: 28-Oct-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH119_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH119_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_OTH119_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH119_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_OTH119_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2433848**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73704	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT128		
Sampler	: [redacted]		

Dates

Date Samples Received	: 22-Oct-2024 11:30	Issue Date	: 23-Oct-2024
Client Requested Due Date	: 28-Oct-2024	Scheduled Reporting Date	: **28-Oct-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 7.5'C DRW 5.7'C 10.7'C 7.7'C SYD - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2433848-001	15-Oct-2024 11:20	0990_POT128_241015	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

QUALITY CONTROL REPORT

Work Order	: **ES2433848**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73704	Issue Date	: 28-Oct-2024
Sampler	: [redacted]		
Site	: POT128		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140511)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	117	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	107	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	127	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	117	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	111	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140511)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	115	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	109	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	120	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	124	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	116	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	125	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140511)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	117	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	127	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	114	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	115	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	112	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140511)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140511) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	105	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	116	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	115	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	104	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2433848**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Site	: POT128	Issue Date	: 28-Oct-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT128_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT128_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT128_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT128_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT128_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

CERTIFICATE OF ANALYSIS

Work Order	: **ES2433848**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024 11:30
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73704	Issue Date	: 28-Oct-2024 11:14
Sampler	: [redacted]		
Site	: POT128		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT128_241015	----	----	----	----
			Sampling date / time	15-Oct-2024 11:20	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433848-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT128_241015	----	----	----	----
			Sampling date / time	15-Oct-2024 11:20	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433848-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**98.4**	----	----	----	----
13C8-PFOA	----	0.02	%	**96.5**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2433844**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: + [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73710	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT201		
Sampler	: [redacted]		

Dates

Date Samples Received	: 22-Oct-2024 11:30	Issue Date	: 23-Oct-2024
Client Requested Due Date	: 28-Oct-2024	Scheduled Reporting Date	: **28-Oct-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 7.5'C DRW 5.7'C 10.7'C 7.7'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2433844-001	16-Oct-2024 09:00	0990_POT201_241016	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2433844**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024 11:30
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73710	Issue Date	: 28-Oct-2024 11:13
Sampler	: [redacted]		
Site	: POT201		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT201_241016	----	----	----	----
			Sampling date / time	16-Oct-2024 09:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433844-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT201_241016	----	----	----	----
			Sampling date / time	16-Oct-2024 09:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433844-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**101**	----	----	----	----
13C8-PFOA	----	0.02	%	**97.1**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2433844**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73710	Issue Date	: 28-Oct-2024
Sampler	: [redacted]		
Site	: POT201		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140511)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	117	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	107	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	127	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	117	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	111	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140511)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	115	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	109	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	120	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	124	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	116	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	125	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140511)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	117	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	127	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	114	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	115	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	112	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140511)								

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140511) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	105	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	116	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	115	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	104	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2433844**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Site	: POT201	Issue Date	: 28-Oct-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT201_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT201_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT201_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT201_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT201_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2433840**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: + [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73701	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT125		
Sampler	: [redacted]		

Dates

Date Samples Received	: 22-Oct-2024 11:30	Issue Date	: 23-Oct-2024
Client Requested Due Date	: 28-Oct-2024	Scheduled Reporting Date	: **28-Oct-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 7.5'C DRW 5.7'C 10.7'C 7.7'C SYD - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

QUALITY CONTROL REPORT

Work Order	: **ES2433840**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73701	Issue Date	: 28-Oct-2024
Sampler	: [redacted]		
Site	: POT125		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6140847) - continued									
ES2434005-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2433932-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.05	0.05	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140847)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	115	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	118	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	107	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	128	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	109	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	101	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140847)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	119	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	106	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	115	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	124	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	81.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	109	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140847)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	119	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	111	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	106	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	94.4	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	117	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	108	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140847)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140847) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	118	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	128	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	127	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	93.0	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	104	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	119	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	109	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	127	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	115	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	112	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	115	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	113	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	108	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	112	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	117	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	130	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	123	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	128	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	114	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	95.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	110	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	117	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	115	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	112	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	98.1	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140847) - continued							
ES2433932-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	108	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	129	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	116	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	99.7	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	119	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	127	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	98.7	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2433840**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Site	: POT125	Issue Date	: 28-Oct-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT125_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT125_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT125_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT125_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT125_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

CERTIFICATE OF ANALYSIS

Work Order	: **ES2433840**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024 11:30
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73701	Issue Date	: 28-Oct-2024 11:12
Sampler	: [redacted]		
Site	: POT125		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT125_241016	----	----	----	----
			Sampling date / time	16-Oct-2024 16:15	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433840-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT125_241016	----	----	----	----
			Sampling date / time	16-Oct-2024 16:15	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433840-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**92.9**	----	----	----	----
13C8-PFOA	----	0.02	%	**96.9**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2435721**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: + [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73697	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT114		
Sampler	: [redacted]		

Dates

Date Samples Received	: 05-Nov-2024 11:00	Issue Date	: 05-Nov-2024
Client Requested Due Date	: 11-Nov-2024	Scheduled Reporting Date	: **11-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 2	Temperature	: 9.3'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2435721-001	30-Oct-2024 10:30	0990_POT114_241030	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2435721**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024
Site	: POT114	Issue Date	: 10-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT114_241030	**30-Oct-2024**	**06-Nov-2024**	28-Apr-2025	✓	**07-Nov-2024**	28-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT114_241030	**30-Oct-2024**	**06-Nov-2024**	28-Apr-2025	✓	**07-Nov-2024**	28-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT114_241030	**30-Oct-2024**	**06-Nov-2024**	28-Apr-2025	✓	**07-Nov-2024**	28-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT114_241030	**30-Oct-2024**	**06-Nov-2024**	28-Apr-2025	✓	**07-Nov-2024**	28-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT114_241030	**30-Oct-2024**	**06-Nov-2024**	28-Apr-2025	✓	**07-Nov-2024**	28-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

QUALITY CONTROL REPORT

Work Order	: **ES2435721**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 06-Nov-2024
C-O-C number	: 73697	Issue Date	: 10-Nov-2024
Sampler	: [redacted]		
Site	: POT114		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]		Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6167405)									
ES2435541-107	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2435541-108	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6167405)									
ES2435541-107	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6167405) - continued									
ES2435541-107	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2435541-108	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6167405)									
ES2435541-107	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2435541-108	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6167405)									
ES2435541-107	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2435541-108	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6167405)									
ES2435541-107	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2435541-108	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6167405)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	77.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	91.5	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	81.7	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	101	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	87.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.5	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6167405)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	84.5	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.3	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	79.6	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	84.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	87.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	95.8	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	91.2	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.0	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.5	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	102	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6167405)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	88.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	99.5	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	83.8	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.6	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	100	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	104	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	90.6	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6167405)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6167405) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	89.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	79.2	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	83.2	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	77.1	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6167405)							
ES2435541-107	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	76.5	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	90.1	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	80.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	102	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	87.7	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	77.3	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6167405)							
ES2435541-107	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	83.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	90.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	84.4	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	84.8	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	86.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	96.3	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	96.2	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	84.0	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	98.5	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	90.6	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	96.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6167405)							
ES2435541-107	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	89.2	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	96.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	91.3	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	89.2	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6167405) - continued							
ES2435541-107	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	96.0	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	99.6	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	91.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6167405)							
ES2435541-107	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	76.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	75.9	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	78.5	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	76.6	71.4	144

CERTIFICATE OF ANALYSIS

Work Order	: **ES2435721**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 05-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 06-Nov-2024
C-O-C number	: 73697	Issue Date	: 10-Nov-2024 11:26
Sampler	: [redacted]		
Site	: POT114		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]		Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_POT114_241030	----	----	----	----
			Sampling date / time	30-Oct-2024 10:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2435721-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_POT114_241030	----	----	----	----
			Sampling date / time	30-Oct-2024 10:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2435721-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	103	----	----	----	----
13C8-PFOA	----	0.02	%	102	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2433852**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: + [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73696	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT113		
Sampler	: [redacted]		

Dates

Date Samples Received	: 22-Oct-2024 11:30	Issue Date	: 23-Oct-2024
Client Requested Due Date	: 28-Oct-2024	Scheduled Reporting Date	: **28-Oct-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 7.5'C DRW 5.7'C 10.7'C 7.7'C SYD - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2433852-001	15-Oct-2024 11:09	0990_POT113_241015	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2433852**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024 11:30
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73696	Issue Date	: 28-Oct-2024 11:15
Sampler	: [redacted]		
Site	: POT113		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

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- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

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Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT113_241015	----	----	----	----
			Sampling date / time	15-Oct-2024 11:09	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433852-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.03**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.04**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT113_241015	----	----	----	----
			Sampling date / time	15-Oct-2024 11:09	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433852-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.07**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.07**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.07**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**104**	----	----	----	----
13C8-PFOA	----	0.02	%	**96.9**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2433852**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73696	Issue Date	: 28-Oct-2024
Sampler	: [redacted]		
Site	: POT113		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140511)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	117	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	107	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	127	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	117	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	111	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140511)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	115	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	109	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	120	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	124	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	116	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	125	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140511)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	117	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	127	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	114	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	115	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	112	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140511)								

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140511) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	105	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	116	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	115	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	104	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2433852**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Site	: POT113	Issue Date	: 28-Oct-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT113_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT113_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT113_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT113_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT113_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2433847**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: + [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73702	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT126		
Sampler	: [redacted]		

Dates

Date Samples Received	: 22-Oct-2024 11:30	Issue Date	: 23-Oct-2024
Client Requested Due Date	: 28-Oct-2024	Scheduled Reporting Date	: **28-Oct-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 7.5'C DRW 5.7'C 10.7'C 7.7'C SYD - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2433847-001	15-Oct-2024 15:51	0990_POT126_241015	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2433847**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024 11:30
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73702	Issue Date	: 28-Oct-2024 11:14
Sampler	: [redacted]		
Site	: POT126		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT126_241015	----	----	----	----
			Sampling date / time	15-Oct-2024 15:51	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433847-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT126_241015	----	----	----	----
			Sampling date / time	15-Oct-2024 15:51	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433847-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**98.8**	----	----	----	----
13C8-PFOA	----	0.02	%	**98.0**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2433847**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73702	Issue Date	: 28-Oct-2024
Sampler	: [redacted]		
Site	: POT126		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140511)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	117	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	107	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	127	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	117	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	111	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140511)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	115	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	109	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	120	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	124	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	116	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	125	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140511)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	117	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	127	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	114	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	115	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	112	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140511)								

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140511) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	105	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	116	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	115	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	104	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2433847**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Site	: POT126	Issue Date	: 28-Oct-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT126_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT126_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT126_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT126_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT126_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2433843**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: + [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73709	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT198		
Sampler	: [redacted]		

Dates

Date Samples Received	: 22-Oct-2024 11:30	Issue Date	: 23-Oct-2024
Client Requested Due Date	: 28-Oct-2024	Scheduled Reporting Date	: **28-Oct-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 7.5'C DRW 5.7'C 10.7'C 7.7'C SYD - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2433843-001	16-Oct-2024 09:15	0990_POT198_241016	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2433843**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024 11:30
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73709	Issue Date	: 28-Oct-2024 11:13
Sampler	: [redacted]		
Site	: POT198		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT198_241016	----	----	----	----
			Sampling date / time	16-Oct-2024 09:15	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433843-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT198_241016	----	----	----	----
			Sampling date / time	16-Oct-2024 09:15	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433843-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**98.4**	----	----	----	----
13C8-PFOA	----	0.02	%	**92.0**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2433843**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73709	Issue Date	: 28-Oct-2024
Sampler	: [redacted]		
Site	: POT198		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6140847) - continued									
ES2434005-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2433932-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.05	0.05	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140847)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	115	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	118	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	107	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	128	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	109	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	101	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140847)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	119	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	106	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	115	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	124	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	81.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	109	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140847)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	119	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	111	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	106	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	94.4	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	117	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	108	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140847)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140847) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	118	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	128	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	127	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	93.0	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	104	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	119	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	109	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	127	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	115	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	112	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	115	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	113	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	108	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	112	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	117	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	130	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	123	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	128	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	114	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	95.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	110	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	117	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	115	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	112	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	98.1	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140847) - continued							
ES2433932-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	108	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	129	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	116	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	99.7	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	119	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	127	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	98.7	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2433843**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Site	: POT198	Issue Date	: 28-Oct-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT198_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT198_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT198_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT198_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT198_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2433839**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: + [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73700	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT124		
Sampler	: [redacted]		

Dates

Date Samples Received	: 22-Oct-2024 11:30	Issue Date	: 23-Oct-2024
Client Requested Due Date	: 28-Oct-2024	Scheduled Reporting Date	: **28-Oct-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 7.5'C DRW 5.7'C 10.7'C 7.7'C SYD - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2433839-001	17-Oct-2024 07:22	0990_POT124_241017	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2433839**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024 11:30
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73700	Issue Date	: 28-Oct-2024 11:12
Sampler	: [redacted]		
Site	: POT124		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_POT124_241017	----	----	----	----
			Sampling date / time	17-Oct-2024 07:22	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433839-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_POT124_241017	----	----	----	----
			Sampling date / time	17-Oct-2024 07:22	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433839-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**95.8**	----	----	----	----
13C8-PFOA	----	0.02	%	**102**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2433839**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73700	Issue Date	: 28-Oct-2024
Sampler	: [redacted]		
Site	: POT124		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6140847) - continued									
ES2434005-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2433932-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.05	0.05	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140847)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	115	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	118	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	107	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	128	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	109	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	101	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140847)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	119	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	106	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	115	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	124	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	81.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	109	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140847)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	119	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	111	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	106	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	94.4	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	117	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	108	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140847)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140847) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	118	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	128	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	127	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	93.0	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	104	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	119	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	109	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	127	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	115	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	112	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	115	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	113	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	108	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	112	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	117	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	130	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	123	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	128	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	114	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	95.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	110	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	117	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	115	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	112	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	98.1	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140847) - continued							
ES2433932-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	108	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	129	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	116	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	99.7	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	119	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	127	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	98.7	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2433839**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Site	: POT124	Issue Date	: 28-Oct-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT124_241017	**17-Oct-2024**	**25-Oct-2024**	15-Apr-2025	✓	**28-Oct-2024**	15-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT124_241017	**17-Oct-2024**	**25-Oct-2024**	15-Apr-2025	✓	**28-Oct-2024**	15-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT124_241017	**17-Oct-2024**	**25-Oct-2024**	15-Apr-2025	✓	**28-Oct-2024**	15-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT124_241017	**17-Oct-2024**	**25-Oct-2024**	15-Apr-2025	✓	**28-Oct-2024**	15-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT124_241017	**17-Oct-2024**	**25-Oct-2024**	15-Apr-2025	✓	**28-Oct-2024**	15-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2433855**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: + [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: [redacted]
C-O-C number	: 73713	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: October 24 PP QC's		
Sampler	: [redacted]		

Dates

Date Samples Received	: 22-Oct-2024 11:30	Issue Date	: 23-Oct-2024
Client Requested Due Date	: 28-Oct-2024	Scheduled Reporting Date	: **28-Oct-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 7.5'C DRW 5.7'C 10.7'C 7.7'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 9 / 9

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **QC Forward analysis will be conducted by ALS Brisbane.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2433855-001	17-Oct-2024 08:41	0990_QC100_241015	✓
ES2433855-002	16-Oct-2024 08:42	0990_QC101_241016	✓
ES2433855-005	15-Oct-2024 17:27	0990_QC300_241015	✓
ES2433855-006	16-Oct-2024 07:45	0990_QC301_241016	✓
ES2433855-007	17-Oct-2024 07:28	0990_QC302_241017	✓
ES2433855-008	15-Oct-2024 17:24	0990_QC400_241015	✓
ES2433855-009	16-Oct-2024 07:45	0990_QC401_241016	✓
ES2433855-010	17-Oct-2024 07:30	0990_QC402_241017	✓
ES2433855-011	11-Oct-2024 08:51	0990_QC500_241011	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2433855**	Page	: 1 of 9
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024 11:30
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73713	Issue Date	: 28-Oct-2024 11:15
Sampler	: [redacted]		
Site	: October 24 PP QC's		
Quote number	: ----		
No. of samples received	: 9		
No. of samples analysed	: 9		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_QC302_241017	0990_QC400_241015	0990_QC500_241011	----	----
			Sampling date / time	17-Oct-2024 07:28	15-Oct-2024 17:24	11-Oct-2024 08:51	----	----
Compound	CAS Number	LOR	Unit	ES2433855-007	ES2433855-008	ES2433855-011	--------	--------
				Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_QC302_241017	0990_QC400_241015	0990_QC500_241011	----	----
			Sampling date / time	17-Oct-2024 07:28	15-Oct-2024 17:24	11-Oct-2024 08:51	----	----
Compound	CAS Number	LOR	Unit	ES2433855-007	ES2433855-008	ES2433855-011	--------	--------
				Result	Result	Result	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**96.0**	**106**	**98.4**	----	----
13C8-PFOA	----	0.02	%	**95.0**	**99.3**	**98.4**	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC100_241015	0990_QC101_241016	0990_QC300_241015	0990_QC301_241016	0990_QC401_241016
			Sampling date / time	17-Oct-2024 08:41	16-Oct-2024 08:42	15-Oct-2024 17:27	16-Oct-2024 07:45	16-Oct-2024 07:45
Compound	CAS Number	LOR	Unit	ES2433855-001	ES2433855-002	ES2433855-005	ES2433855-006	ES2433855-009
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.04**	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.16**	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	**0.03**	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**0.07**	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC100_241015	0990_QC101_241016	0990_QC300_241015	0990_QC301_241016	0990_QC401_241016
			Sampling date / time	17-Oct-2024 08:41	16-Oct-2024 08:42	15-Oct-2024 17:27	16-Oct-2024 07:45	16-Oct-2024 07:45
Compound	CAS Number	LOR	Unit	ES2433855-001	ES2433855-002	ES2433855-005	ES2433855-006	ES2433855-009
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.30**	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.20**	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.30**	<0.01	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**103**	**101**	**103**	**100**	**98.5**
13C8-PFOA	----	0.02	%	**96.6**	**94.0**	**101**	**95.6**	**96.4**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC402_241017	----	----	----	----
			Sampling date / time	17-Oct-2024 07:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433855-010	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC402_241017	----	----	----	----
			Sampling date / time	17-Oct-2024 07:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433855-010	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**96.2**	----	----	----	----
13C8-PFOA	----	0.02	%	**97.2**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2433855**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73713	Issue Date	: 28-Oct-2024
Sampler	: [redacted]		
Site	: October 24 PP QC's		
Quote number	: ----		
No. of samples received	: 9		
No. of samples analysed	: 9		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140511)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	117	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	107	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	127	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	117	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	111	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140511)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	115	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	109	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	120	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	124	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	116	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	125	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140511)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	117	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	127	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	114	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	115	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	112	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140511)								

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140511) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	105	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	116	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	115	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	104	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2433855**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Site	: October 24 PP QC's	Issue Date	: 28-Oct-2024
Sampler	: [redacted]	No. of samples received	: 9
Order number	: 60676801/	No. of samples analysed	: 9

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_QC500_241011	**11-Oct-2024**	**25-Oct-2024**	09-Apr-2025	✓	**28-Oct-2024**	09-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC300_241015, 0990_QC400_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC101_241016, 0990_QC301_241016, 0990_QC401_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC100_241015, 0990_QC302_241017, 0990_QC402_241017	**17-Oct-2024**	**25-Oct-2024**	15-Apr-2025	✓	**28-Oct-2024**	15-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_QC500_241011	**11-Oct-2024**	**25-Oct-2024**	09-Apr-2025	✓	**28-Oct-2024**	09-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC300_241015, 0990_QC400_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC101_241016, 0990_QC301_241016, 0990_QC401_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC100_241015, 0990_QC302_241017, 0990_QC402_241017	**17-Oct-2024**	**25-Oct-2024**	15-Apr-2025	✓	**28-Oct-2024**	15-Apr-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_QC500_241011	**11-Oct-2024**	**25-Oct-2024**	09-Apr-2025	✓	**28-Oct-2024**	09-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC300_241015, 0990_QC400_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC101_241016, 0990_QC301_241016, 0990_QC401_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC100_241015, 0990_QC302_241017, 0990_QC402_241017	**17-Oct-2024**	**25-Oct-2024**	15-Apr-2025	✓	**28-Oct-2024**	15-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_QC500_241011	**11-Oct-2024**	**25-Oct-2024**	09-Apr-2025	✓	**28-Oct-2024**	09-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC300_241015, 0990_QC400_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC101_241016, 0990_QC301_241016, 0990_QC401_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC100_241015, 0990_QC302_241017, 0990_QC402_241017	**17-Oct-2024**	**25-Oct-2024**	15-Apr-2025	✓	**28-Oct-2024**	15-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_QC500_241011	**11-Oct-2024**	**25-Oct-2024**	09-Apr-2025	✓	**28-Oct-2024**	09-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC300_241015, 0990_QC400_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC101_241016, 0990_QC301_241016, 0990_QC401_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC100_241015, 0990_QC302_241017, 0990_QC402_241017	**17-Oct-2024**	**25-Oct-2024**	15-Apr-2025	✓	**28-Oct-2024**	15-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2433851**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: + [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73708	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT131		
Sampler	: [redacted]		

Dates

Date Samples Received	: 22-Oct-2024 11:30	Issue Date	: 23-Oct-2024
Client Requested Due Date	: 28-Oct-2024	Scheduled Reporting Date	: **28-Oct-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 7.5'C DRW 5.7'C 10.7'C 7.7'C SYD - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2433851-001	15-Oct-2024 16:04	0990_POT131_241015	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2433851**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024 11:30
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73708	Issue Date	: 28-Oct-2024 11:14
Sampler	: [redacted]		
Site	: POT131		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT131_241015	----	----	----	----
			Sampling date / time	15-Oct-2024 16:04	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433851-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT131_241015	----	----	----	----
			Sampling date / time	15-Oct-2024 16:04	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433851-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**104**	----	----	----	----
13C8-PFOA	----	0.02	%	**97.5**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2433851**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73708	Issue Date	: 28-Oct-2024
Sampler	: [redacted]		
Site	: POT131		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140511)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	117	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	107	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	127	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	117	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	111	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140511)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	115	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	109	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	120	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	124	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	116	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	125	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140511)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	117	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	127	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	114	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	115	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	112	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140511)								

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140511) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	105	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	116	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	115	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	104	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2433851**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Site	: POT131	Issue Date	: 28-Oct-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT131_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT131_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT131_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT131_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT131_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2433846**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: + [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73692	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: OTH117		
Sampler	: [redacted] [redacted]		

Dates

Date Samples Received	: 22-Oct-2024 11:30	Issue Date	: 23-Oct-2024
Client Requested Due Date	: 28-Oct-2024	Scheduled Reporting Date	: **28-Oct-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 7.5'C DRW 5.7'C 10.7'C 7.7'C SYD - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2433846-001	15-Oct-2024 17:18	0990_OTH117_241015	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2433846**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024 11:30
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73692	Issue Date	: 28-Oct-2024 11:13
Sampler	: [redacted], [redacted]		
Site	: OTH117		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_OTH117_241015	----	----	----	----
			Sampling date / time	15-Oct-2024 17:18	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433846-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_OTH117_241015	----	----	----	----
			Sampling date / time	15-Oct-2024 17:18	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433846-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**98.9**	----	----	----	----
13C8-PFOA	----	0.02	%	**96.3**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2433846**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73692	Issue Date	: 28-Oct-2024
Sampler	: [redacted]		
Site	: OTH117		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140511)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	117	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	107	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	127	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	117	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	111	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140511)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	115	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	127	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	109	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	120	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	124	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	116	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	125	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.2	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140511)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	117	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	127	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	110	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	114	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	115	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	112	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140511)								

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140511) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	105	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	116	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	115	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	104	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2433846**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Site	: OTH117	Issue Date	: 28-Oct-2024
Sampler	: [redacted], [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH117_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH117_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_OTH117_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH117_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_OTH117_241015	**15-Oct-2024**	**25-Oct-2024**	13-Apr-2025	✓	**28-Oct-2024**	13-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	19	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2433842**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: + [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73707	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT130		
Sampler	: [redacted]		

Dates

Date Samples Received	: 22-Oct-2024 11:30	Issue Date	: 23-Oct-2024
Client Requested Due Date	: 28-Oct-2024	Scheduled Reporting Date	: **28-Oct-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 7.5'C DRW 5.7'C 10.7'C 7.7'C SYD - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2433842-001	16-Oct-2024 07:30	0990_POT130_241016	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2433842**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024 11:30
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73707	Issue Date	: 28-Oct-2024 11:13
Sampler	: [redacted]		
Site	: POT130		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT130_241016	----	----	----	----
			Sampling date / time	16-Oct-2024 07:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433842-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT130_241016	----	----	----	----
			Sampling date / time	16-Oct-2024 07:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433842-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**97.5**	----	----	----	----
13C8-PFOA	----	0.02	%	**92.3**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2433842**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73707	Issue Date	: 28-Oct-2024
Sampler	: [redacted]		
Site	: POT130		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6140847) - continued									
ES2434005-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2433932-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.05	0.05	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140847)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	115	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	118	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	107	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	128	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	109	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	101	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140847)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	119	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	106	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	115	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	124	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	81.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	109	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140847)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	119	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	111	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	106	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	94.4	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	117	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	108	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140847)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140847) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	118	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	128	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	127	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	93.0	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	104	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	119	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	109	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	127	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	115	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	112	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	115	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	113	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	108	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	112	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	117	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	130	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	123	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	128	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	114	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	95.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	110	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	117	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	115	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	112	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	98.1	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140847) - continued							
ES2433932-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	108	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	129	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	116	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	99.7	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	119	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	127	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	98.7	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2433842**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	[redacted]	: + [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Site	: POT130	Issue Date	: 28-Oct-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT130_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT130_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT130_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT130_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT130_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

CERTIFICATE OF ANALYSIS

Work Order	: **ES2436471**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 12-Nov-2024 11:00
Order number	: 60676801	Date Analysis Commenced	: 14-Nov-2024
C-O-C number	: ----	Issue Date	: 18-Nov-2024 14:38
Sampler	: [redacted]		
Site	: Tindal		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_OTH113_241107	----	----	----	----
			Sampling date / time	07-Nov-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436471-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.08**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.11**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_OTH113_241107	----	----	----	----
			Sampling date / time	07-Nov-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436471-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.19**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.19**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.19**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**97.8**	----	----	----	----
13C8-PFOA	----	0.02	%	**98.9**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2436471**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	[redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 12-Nov-2024
Order number	: 60676801	Date Analysis Commenced	: 14-Nov-2024
C-O-C number	: ----	Issue Date	: 18-Nov-2024
Sampler	: [redacted]		
Site	: Tindal		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6188119)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	96.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	91.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	84.5	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	102	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	93.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	88.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6188119)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	100	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	98.9	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	106	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	99.5	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	101	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	104	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	103	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6188119)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	101	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	106	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	88.3	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	95.7	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	99.7	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	107	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	96.3	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6188119)								

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6188119) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	98.0	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	97.5	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	91.3	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	80.7	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2436471**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	[redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 12-Nov-2024
Site	: Tindal	Issue Date	: 18-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH113_241107	**07-Nov-2024**	**14-Nov-2024**	06-May-2025	✓	**18-Nov-2024**	06-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH113_241107	**07-Nov-2024**	**14-Nov-2024**	06-May-2025	✓	**18-Nov-2024**	06-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_OTH113_241107	**07-Nov-2024**	**14-Nov-2024**	06-May-2025	✓	**18-Nov-2024**	06-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH113_241107	**07-Nov-2024**	**14-Nov-2024**	06-May-2025	✓	**18-Nov-2024**	06-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_OTH113_241107	**07-Nov-2024**	**14-Nov-2024**	06-May-2025	✓	**18-Nov-2024**	06-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	6	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	6	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2433838**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: + [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: [redacted]
C-O-C number	: 73699	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT121		
Sampler	: [redacted]		

Dates

Date Samples Received	: 22-Oct-2024 11:30	Issue Date	: 23-Oct-2024
Client Requested Due Date	: 28-Oct-2024	Scheduled Reporting Date	: **28-Oct-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 7.5'C DRW 5.7'C 10.7'C 7.7'C SYD - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2433838-001	16-Oct-2024 09:40	0990_POT121_241016	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

QUALITY CONTROL REPORT

Work Order	: **ES2433838**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73699	Issue Date	: 28-Oct-2024
Sampler	: [redacted]		
Site	: POT121		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6140847) - continued									
ES2434005-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2433932-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6140847)									
ES2434005-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2433932-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.05	0.05	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140847)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	115	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	118	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	107	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	128	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	109	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	101	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140847)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	119	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	106	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	115	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	124	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	81.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	109	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140847)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	119	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	111	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	106	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	94.4	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	117	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	108	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140847)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140847) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	118	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	128	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	127	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	93.0	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	104	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	119	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	109	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	127	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	115	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	112	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	115	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	113	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	108	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	112	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	117	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	130	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	123	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	128	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	114	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	95.8	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	110	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	117	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	115	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	112	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	98.1	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6140847) - continued							
ES2433932-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	108	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	129	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	116	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6140847)							
ES2433932-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	99.7	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	119	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	127	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	98.7	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2433838**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	[redacted]	: + [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024
Site	: POT121	Issue Date	: 28-Oct-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT121_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT121_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT121_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT121_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT121_241016	**16-Oct-2024**	**25-Oct-2024**	14-Apr-2025	✓	**28-Oct-2024**	14-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

CERTIFICATE OF ANALYSIS

Work Order	: **ES2433838**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 22-Oct-2024 11:30
Order number	: 60676801/	Date Analysis Commenced	: 24-Oct-2024
C-O-C number	: 73699	Issue Date	: 28-Oct-2024 11:12
Sampler	: [redacted]		
Site	: POT121		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT121_241016	----	----	----	----
			Sampling date / time	16-Oct-2024 09:40	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433838-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.01**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.02**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT121_241016	----	----	----	----
			Sampling date / time	16-Oct-2024 09:40	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2433838-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.03**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.03**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.03**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**92.8**	----	----	----	----
13C8-PFOA	----	0.02	%	**96.8**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

Australian Government
National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO06/240624 **Sample Matrix:** Liquid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		ug/L	ug/L	ug/L	ug/L	%	%	%
PFBA (375-22-4)	NR70	0.05	<0.05	NA	NA	NA	111	NA
PFPeA (2706-90-3)	NR70	0.02	<0.02	NA	NA	NA	96	NA
PFHxA (307-24-4)	NR70	0.01	<0.01	NA	NA	NA	100	NA
PFHpA (375-85-9)	NR70	0.01	<0.01	NA	NA	NA	103	NA
PFOA (335-67-1)	NR70	0.01	<0.01	NA	NA	NA	97	NA
PFNA (375-95-1)	NR70	0.01	<0.01	NA	NA	NA	95	NA
PFDA (335-76-2)	NR70	0.01	<0.01	NA	NA	NA	99	NA
PFUdA (2058-94-8)	NR70	0.01	<0.01	NA	NA	NA	94	NA
PFDoA (307-55-1)	NR70	0.01	<0.01	NA	NA	NA	102	NA
PFTrDA (72629-94-8)	NR70	0.02	<0.02	NA	NA	NA	101	NA
PFTeDA (376-06-7)	NR70	0.02	<0.02	NA	NA	NA	97	NA
PFHxDA (67905-19-5)	NR70	0.02	<0.02	NA	NA	NA	98	NA
PFODA (16517-11-6)	NR70	0.05	<0.05	NA	NA	NA	110	NA
FOUEA (70887-84-2)	NR70	0.01	<0.01	NA	NA	NA	116	NA
PFBS (375-73-5)	NR70	0.01	<0.01	NA	NA	NA	105	NA
PFPeS (2706-91-4)	NR70	0.01	<0.01	NA	NA	NA	97	NA
PFHxS (355-46-4)	NR70	0.01	<0.01	NA	NA	NA	98	NA
PFHpS (375-92-8)	NR70	0.01	<0.01	NA	NA	NA	91	NA
PFOS (1763-23-1)	NR70	0.02	<0.02	NA	NA	NA	96	NA
PFNS (68259-12-1)	NR70	0.01	<0.01	NA	NA	NA	95	NA
PFDS (335-77-3)	NR70	0.01	<0.01	NA	NA	NA	76	NA
PFOSA (754-91-6)	NR70	0.01	<0.01	NA	NA	NA	91	NA
N-MeFOSA (31506-32-8)	NR70	0.02	<0.02	NA	NA	NA	127	NA
N-EtFOSA (4151-50-2)	NR70	0.02	<0.02	NA	NA	NA	122	NA
N-MeFOSAA (2355-31-9)	NR70	0.01	<0.01	NA	NA	NA	94	NA
N-EtFOSAA(2991-50-6)	NR70	0.01	<0.01	NA	NA	NA	103	NA
N-MeFOSE (24448-09-7)	NR70	0.05	<0.05	NA	NA	NA	106	NA
N-EtFOSE (1691-99-2)	NR70	0.05	<0.05	NA	NA	NA	84	NA
4:2 FTS (757124-72-4)	NR70	0.01	<0.01	NA	NA	NA	98	NA
6:2 FTS (27619-97-2)	NR70	0.01	<0.01	NA	NA	NA	96	NA
8:2 FTS (39108-34-4)	NR70	0.01	<0.01	NA	NA	NA	84	NA
10:2 FTS (120226-60-0)	NR70	0.01	<0.01	NA	NA	NA	53	NA
8:2 diPAP (678-41-1)	NR70	0.02	<0.02	NA	NA	NA	91	NA

Results expressed in percentage (%) or ug/L wherever appropriate.
Acceptable Spike recovery is 50-150%.
Maximum acceptable RPDs on spikes and duplicates is 40%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference.

Signed:

Danny Slee
Organics Manager, NMI-North Ryde

Date: **30/06/2024**

Australian Government
Department of Industry, Science and Resources

National Measurement Institute

NATA

REPORT OF ANALYSIS

Report No. RN1433170

Client	: AECOM AUSTRALIA PTY LTD LEVEL 8 540 WICKHAM STREET	**Job No.**	: AECO06/240624
		Quote No.	: QT-02257
		Order No.	: 60612561/3_1
		Date Received	: 24-JUN-2024
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: NT_0990_PFASOMP_24		
Your Client Services Manager	: Danny Slee	**Phone**	: 02 9449 0169

Lab Reg No.	Sample Ref	Sample Description
N24/014011	0990_QC200_240619	WATER 19/06/2024

Lab Reg No.		N24/014011				
Date Sampled		19-JUN-2024				
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	ug/L	<0.05				NR70
PFPeA (2706-90-3)	ug/L	<0.02				NR70
PFHxA (307-24-4)	ug/L	<0.01				NR70
PFHpA (375-85-9)	ug/L	<0.01				NR70
PFOA (335-67-1)	ug/L	<0.01				NR70
PFNA (375-95-1)	ug/L	<0.01				NR70
PFDA (335-76-2)	ug/L	<0.01				NR70
PFUdA (2058-94-8)	ug/L	<0.01				NR70
PFDoA (307-55-1)	ug/L	<0.01				NR70
PFTrDA (72629-94-8)	ug/L	<0.02				NR70
PFTeDA (376-06-7)	ug/L	<0.02				NR70
PFHxDA (67905-19-5)	ug/L	<0.02				NR70
PFODA (16517-11-6)	ug/L	<0.05				NR70
FOUEA (70887-84-2)	ug/L	<0.01				NR70
PFDS (335-77-3)	ug/L	<0.01				NR70
PFPeS (2706-91-4)	ug/L	<0.01				NR70
PFHxS (355-46-4)	ug/L	0.020				NR70
PFHpS (375-92-8)	ug/L	<0.01				NR70
PFOS (1763-23-1)	ug/L	0.033				NR70
PFNS (68259-12-1)	ug/L	<0.01				NR70
PFBS (375-73-5)	ug/L	<0.01				NR70
PFOSA (754-91-6)	ug/L	<0.01				NR70
N-MeFOSA (31506-32-8)	ug/L	<0.02				NR70
N-EtFOSA (4151-50-2)	ug/L	<0.02				NR70
N-MeFOSAA (2355-31-9)	ug/L	<0.01				NR70
N-EtFOSAA(2991-50-6)	ug/L	<0.01				NR70
N-MeFOSE (24448-09-7)	ug/L	<0.05				NR70
N-EtFOSE (1691-99-2)	ug/L	<0.05				NR70
4:2 FTS (757124-72-4)	ug/L	<0.01				NR70
6:2 FTS (27619-97-2)	ug/L	<0.01				NR70

REPORT OF ANALYSIS

Report No. RN1433170

Lab Reg No.		N24/014011				
Date Sampled		19-JUN-2024				
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
8:2 FTS (39108-34-4)	ug/L	<0.01				NR70
10:2 FTS (120226-60-0)	ug/L	<0.01				NR70
8:2 diPAP (678-41-1)	ug/L	<0.02				NR70
PFBA (Surrogate Recovery)	%	124				NR70
PFPeA (Surrogate Recovery)	%	114				NR70
PFHxA (Surrogate Recovery)	%	133				NR70
PFHpA (Surrogate Recovery)	%	129				NR70
PFOA (Surrogate Recovery)	%	115				NR70
PFNA (Surrogate Recovery)	%	88				NR70
PFDA (Surrogate Recovery)	%	79				NR70
PFUdA (Surrogate Recovery)	%	63				NR70
PFDoA (Surrogate Recovery)	%	48				NR70
PFTeDA (Surrogate Recovery)	%	53				NR70
PFHxDA (Surrogate Recovery)	%	83				NR70
FOUEA (Surrogate Recovery)	%	48				NR70
PFBS (Surrogate Recovery)	%	124				NR70
PFHxS (Surrogate Recovery)	%	122				NR70
PFOS (Surrogate Recovery)	%	99				NR70
PFOSA (Surrogate Recovery)	%	49				NR70
N-MeFOSA (Surrogate Recovery)	%	34				NR70
N-EtFOSA (Surrogate Recovery)	%	32				NR70
N-MeFOSAA (Surrogate Recovery)	%	39				NR70
N-EtFOSAA (Surrogate Recovery)	%	39				NR70
N-MeFOSE (Surrogate Recovery)	%	49				NR70
N-EtFOSE (Surrogate Recovery)	%	46				NR70
4:2 FTS (Surrogate Recovery)	%	102				NR70
6:2 FTS (Surrogate Recovery)	%	101				NR70
8:2 FTS (Surrogate Recovery)	%	77				NR70
8:2 diPAP (Surrogate Recovery)	%	75				NR70
Dates						
Date extracted		25-JUN-2024				
Date analysed		25-JUN-2024				

N24/014011
PFOS and PFHxS are quantified using a combined branched and linear standard,
linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.

REPORT OF ANALYSIS

Selected PFAS surrogate recoveries are biased due to matrix effects.ô
Surrogate recoveries low for selected analytes - PFAS LORs not raised since S/N >10.

Luke Baker, Analyst
Organics - NSW
Accreditation No. 198

01-JUL-2024

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

Measurement Uncertainty is available upon request.

Note: Sampling date(s) have been provided by the client.
The testing was undertaken at: 105 Delhi Road, North Ryde, NSW, 2113

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB2438420**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted] 4053
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: + [redacted]
Facsimile	: ----	Facsimile	: +61-7-3243 7218
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: [redacted]
C-O-C number	: 74969	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: QC PP October		
Sampler	: [redacted]		

Dates

Date Samples Received	: 07-Nov-2024 10:30	Issue Date	: 07-Nov-2024
Client Requested Due Date	: 14-Nov-2024	Scheduled Reporting Date	: **14-Nov-2024**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 12.2°C, 14.5°C, 21.6°C - Ice present
Receipt Detail	: ESKY LARGE	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Unless otherwise stated, analytical work for this work order will be conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818.
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
EB2438420-001	04-Nov-2024 12:28	0990_QC200_241030	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **EB2438420**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: LEVEL 21 420 GEORGE STREET SYDNEY NSW, AUSTRALIA 2000	[redacted]	: 2 Byth Street Stafford QLD Australia 4053
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 07-Nov-2024 10:30
Order number	: 60676801/	Date Analysis Commenced	: 08-Nov-2024
C-O-C number	: 74969	Issue Date	: 14-Nov-2024 15:43
Sampler	: [redacted]		
Site	: QC PP October		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC200_241030	----	----	----	----
			Sampling date / time	04-Nov-2024 12:28	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2438420-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC200_241030	----	----	----	----
			Sampling date / time	04-Nov-2024 12:28	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2438420-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**104**	----	----	----	----
13C8-PFOA	----	0.02	%	**104**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EB2438420**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 07-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 08-Nov-2024
C-O-C number	: 74969	Issue Date	: 14-Nov-2024
Sampler	: [redacted]		
Site	: QC PP October		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6179772)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	74.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	77.0	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	70.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	78.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	72.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	75.3	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6179772)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	73.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	74.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	75.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	74.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	72.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	74.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	72.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	69.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	72.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	76.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	86.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6179772)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	67.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	68.8	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	64.3	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	68.5	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	64.9	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	70.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	78.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6179772)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6179772) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	65.3	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.2378 µg/L	71.1	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	82.3	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.241 µg/L	64.5	64.2	133

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2438420**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 07-Nov-2024
Site	: QC PP October	Issue Date	: 14-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_QC200_241030	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_QC200_241030	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_QC200_241030	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_QC200_241030	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_QC200_241030	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB2436756**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73713	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: October 24 PP QC's		
Sampler	: [redacted]		

Dates

Date Samples Received	: 24-Oct-2024 09:30	Issue Date	: 31-Oct-2024
Client Requested Due Date	: 31-Oct-2024	Scheduled Reporting Date	: **31-Oct-2024**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 12.3°C, 18.2°C, 11.2°C - Ice present
Receipt Detail	: ESKY LARGE	No. of samples received / analysed	: 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **31/10: SRN has been resent to acknowledge the correction of the project reference from NSW_0356_PFASOMP -23 to NT_0990_PFASOMP_24 as per the COC. For any further information regarding these adjustments please contact client services at** [redacted]
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Unless otherwise stated, analytical work for this work order will be conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818.
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
EB2436756-001	15-Oct-2024 09:41	0990_QC200_241015	✓
EB2436756-002	15-Oct-2024 09:43	0990_QC201_241016	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **EB2436756**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 24-Oct-2024 09:30
Order number	: 60676801/	Date Analysis Commenced	: 25-Oct-2024
C-O-C number	: 73713	Issue Date	: 31-Oct-2024 09:49
Sampler	: [redacted], [redacted]		
Site	: October 24 PP QC's		
Quote number	: ----		
No. of samples received	: 2		
No. of samples analysed	: 2		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X PFAS: Particular Samples showed matrix interference indicated by internal standard recovery less than 50%. This is deemed acceptable as all associated analytes are less than the limit of reporting.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC200_241015	0990_QC201_241016	----	----	----
			Sampling date / time	15-Oct-2024 09:41	15-Oct-2024 09:43	----	----	----
Compound	CAS Number	LOR	Unit	EB2436756-001	EB2436756-002	--------	--------	--------
				Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.04**	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.14**	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	**0.02**	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**0.08**	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC200_241015	0990_QC201_241016	----	----	----
			Sampling date / time	15-Oct-2024 09:41	15-Oct-2024 09:43	----	----	----
Compound	CAS Number	LOR	Unit	EB2436756-001	EB2436756-002	--------	--------	--------
				Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.28**	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.18**	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.28**	<0.01	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**98.6**	**100**	----	----	----
13C8-PFOA	----	0.02	%	**93.1**	**89.1**	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EB2436756**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	Contact	: [redacted]
[redacted]	: [redacted]	[redacted]	: [redacted]
[redacted]	: ----	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 24-Oct-2024
Order number	: 60676801/	Date Analysis Commenced	: 25-Oct-2024
C-O-C number	: 73713	Issue Date	: 31-Oct-2024
Sampler	: [redacted], [redacted]		
Site	: October 24 PP QC's		
Quote number	: ----		
No. of samples received	: 2		
No. of samples analysed	: 2		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6148109)									
EB2436463-041	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6148109)									
EB2436463-041	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6148109)									
EB2436463-041	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6148109) - continued									
EB2436463-041	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6148109)									
EB2436463-041	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6148109)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	109	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	102	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	75.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	115	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	88.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	96.9	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6148109)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	95.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	120	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	105	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	107	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	110	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	115	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	130	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	130	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6148109)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	123	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	69.1	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.3	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	77.4	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	100	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	98.6	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	99.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6148109)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6148109) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	100	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.2378 µg/L	117	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	110	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.241 µg/L	121	64.2	133

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2436756**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: [redacted]	[redacted]	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 24-Oct-2024
Site	: October 24 PP QC's	Issue Date	: 31-Oct-2024
Sampler	: [redacted], [redacted]	No. of samples received	: 2
Order number	: 60676801/	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	14	7.14	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	14	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0990_QC200_241015,	0990_QC201_241016	**15-Oct-2024**	**28-Oct-2024**	13-Apr-2025	✓	**29-Oct-2024**	13-Apr-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0990_QC200_241015,	0990_QC201_241016	**15-Oct-2024**	**28-Oct-2024**	13-Apr-2025	✓	**29-Oct-2024**	13-Apr-2025	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
0990_QC200_241015,	0990_QC201_241016	**15-Oct-2024**	**28-Oct-2024**	13-Apr-2025	✓	**29-Oct-2024**	13-Apr-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0990_QC200_241015,	0990_QC201_241016	**15-Oct-2024**	**28-Oct-2024**	13-Apr-2025	✓	**29-Oct-2024**	13-Apr-2025	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X)								
0990_QC200_241015,	0990_QC201_241016	**15-Oct-2024**	**28-Oct-2024**	13-Apr-2025	✓	**29-Oct-2024**	13-Apr-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	14	**7.14**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	14	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

Prepared for
Department of Defence Directorate of PFAS Remediation Environment and Engineering Branch
ABN: 68706814312

AECOM

End of Wet Season Sampling Event Report 2025

PFAS OMP - RAAF Base Tindal

14-Aug-2025
PFAS Ongoing Monitoring Program

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End of Wet Season Sampling Event Report 2025

PFAS OMP - RAAF Base Tindal

Client: Department of Defence Directorate of PFAS Remediation Environment and Engineering Branch

ABN: 68706814312

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Quality Information

Document End of Wet Season Sampling Event Report 2025

Date 14-Aug-2025

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Checker/s [redacted]

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Abbreviations

Abbreviation	Term
AECOM	AECOM Australia Pty Ltd
ALS	Australian Laboratory Services Environmental Pty Ltd
AS/NZ	Australian/New Zealand Standard
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure 1999
COC	Chain of Custody
DCMM	Defence Contamination Management Manual
Defence	Department of Defence
DO	Dissolved Oxygen
DoH	Department of Health
DQO	Data quality objectives
DSI	Detailed Site Investigations
DQI	Data quality indicators
EC	Electrical Conductivity
HEPA	Heads of Environment Protection Authority
LOR	Limit of Reporting
MW	Monitoring Well
NATA	National Association of Testing Authorities
NEMP	National Environmental Management Plan
NHMRC	National Health and Medical Research Council
NMI	National Measurement Institute
NSW	New South Wales
OMP	Ongoing Monitoring Plan
OMR	Ongoing Monitoring Report
PFAS	Per- and poly-fluoroalkyl substances
PFHxS	Perfluorohexanesulfonic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance and Quality Control

Abbreviation	Term
RAAF	Royal Australian Air Force
RPD	Relative percentage difference
SAQP	Sampling and Analysis Quality Plan
SER	Sampling Event Report
SW	Surface Water

List of Units

Unit	Definition	Unit	Definition
°C	degrees Celsius	mg	milligrams
cm	centimetre	mV	millivolts
L	litre	µg	micrograms
m	metre	µS	microsiemens
mAHD	metres Australian Height Datum	mbTOC	metres below top of casing

1.0 Introduction

1.1 Preamble

AECOM Australia Pty Ltd (AECOM) was engaged by the Department of Defence (Defence) in January 2022 to implement the per- and poly-fluoroalkyl substances (PFAS) Management Action Plan (PMAP) (Defence, 2019), for Royal Australian Air Force (RAAF) Base Tindal ('the base'). The PMAP implementation comprises a number of services which will be collectively referred to as the 'project' hereafter.

The location of the base with respect to the nearby township of Katherine, Northern Territory (NT) is shown on **Figure F1 (Appendix A).** The figure also outlines the PFAS management area of the base and Katherine surrounds.

The key objectives of the project (in its entirety) are to:

- Implement practicable solutions to prevent or minimise the migration of PFAS beyond the Defence property boundary by addressing significant source area/pathways on the base
- Ensure the proposed and implemented remedial strategies have measurable and demonstratable results.

The project has been split into five Service Packages, with Service Package 4 Ongoing Monitoring Plan (OMP) Services being relevant to this End of Wet Season 2025 Sampling Event Report (SER). The OMP that guided the sampling program documented in this report was approved in January 2025 (Defence, 2025), which replaced the previously approved OMP (Defence, 2021a).

The primary purpose of the OMP (comprising both dry and wet season sampling) is to monitor changes to the PFAS impact in groundwater and surface water pathways associated with the key sources of PFAS on base, as initially identified and assessed through the detailed site investigation (DSI) phase of works (Coffey, 2018a) (Coffey, 2018b). Changes in PFAS impact may result from the base-specific or cumulative influence of remediation or containment actions, transportation trends, and / or changes to hydrogeology or climatic conditions. Identified changes to PFAS impact originating from the base can inform risk management decisions taken by Defence and Territory agencies to protect human health and the environment. At the end of the 2024-2025 sampling period (Aug 2024 – May 2025), an ongoing monitoring report is to be prepared that assesses the complete data set collected during the discrete monitoring events completed over the 10-month period. This annual assessment will consider environmental variability and statistically significant trends in PFAS concentrations.

The seasonal monitoring program at the base includes a regime of groundwater, surface water and biota sampling to evaluate these changes in the long term, to enable Defence to maintain an up-to-date understanding of temporal and spatial distribution, concentration, and transport of PFAS. The data collection requirements which were adopted for the end of wet season event are documented in the *Sampling Analysis and Quality Plan (SAQP) (Revision 0)* (AECOM, 2025).

Table 1 Sampling schedule with end of wet season sampling highlighted in green

Sampling	Wet Season						Dry Season					
	Early		Mid		Late		Early		Mid		Late	
	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25
Groundwater	Monthly in Wet	Monthly in Wet	Monthly in Wet	Monthly in Wet	Monthly in Wet	Monthly in Wet				Once in Dry		
												Annual
				Biannual							Biannual	
Surface Water		Twice in Wet Season			Twice in Wet							
											Annual	
					Biannual						Biannual	
Aquatic Biota											Annual	

1.2 Objectives

The purpose of this SER is to summarise the scope of work, methodology, results and findings from the wet season sampling works conducted between February 2025 and May 2025 in accordance with the SAQP (AECOM, 2025).

This report has been prepared in accordance with the Defence's PFAS OMP Reporting Guidance (Defence, 2024).

An annual ongoing monitoring report (OMR) will be subsequently developed for the purpose of assessing the data collected between August 2024 and May 2025.

2.0 Scope of Work

2.1 Overarching Scope

The groundwater and surface water sampling works described herein were completed in general accordance with the SAQP (AECOM, 2025). Where deviations arose, these are listed with the significance of the consequence described in **Section 2.3** below. Prior to sampling, the SAQP was reviewed to ensure compliance with the following:

- the OMP (Defence, 2025)
- Heads of the Environment Protection Authority (HEPA), PFAS National Environmental Management Plan (NEMP), version 3.0 (HEPA, 2025)
- National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended 2013 (ASC NEPM, 2013)
- Defence Pollution Prevent Manual (Defence, 2017)
- Australian/New Zealand Standard (AS/NZ) 5667:1998 Water quality – Sampling (AS/NZS, 1998)
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018)**.**

The planned scope of work for the end of wet season 2025 monitoring period included:

- Collection of groundwater samples from 18 private bore locations in accordance with the 'monthly in the wet' sampling scope on three occasions in February, March and April 2025.
- Gauging (where possible) and collection of samples from 50 groundwater locations in April and May 2025. These wells are sampled biannually.
- Collection of samples from six surface water locations in March 2025 that are sampled biannually.
- Collection of samples from six 'twice in wet season' surface water locations in April 2025.
- Collection of relevant quality assurance and quality control (QA/QC) samples in accordance with the relevant SAQP at the time of sampling
- Analysis of samples included the 28 analyte PFAS-suite (full suite) at the standard limit of reporting (LOR). Data management of the field and laboratory data in the Defence ESdat database in accordance with Defence's Contamination Management Manual (DCMM), Annex L. (Defence, 2021b).
- Preparation of this SER.

2.2 Monitoring Locations

The monitoring locations outlined within the SAQP (AECOM, 2025) for the end of wet season sampling events are tabulated below. Deviations from the planned sampling are highlighted in **bold** and detailed in **Section 2.3**.

Table 2 'Monthly in wet season' private bore groundwater sampling locations – February 2025, March 2025 and April 2025 (Figure 2 – 7 in Appendix A)

Area	Description	SAQP Locations
Off-Base - Private	Shadforth Road	POT114[1], OTH117[1], POT120, POT130, POT124,
	Zimin Drive	POT112, POT113, POT121[1], POT125, POT126, POT127, POT128, POT129, OTH118, OTH119[1], POT131
	Tokmakoff Road	POT198[1], POT201

1 Not presented in Appendix A– Figure 3 for privacy reasons.

Table 3 Biannual Groundwater Sample Locations – April-May 2025 (Figure 9 & 10 in Appendix A)

Area	Description	SAQP Locations
On base	Fire Training Area	MW104, MW231, MW803D, MW803I, MW803S
	Central Transect	MW106, MW107, MW109S, MW109D, MW110, MW111D, MW111S, MW403, MW801S
	Western Base boundary	**MW117**
		MW118D, MW118I, **MW118S**, **MW119**, MW130, **MW131**
	Fire Station Area	MW127, MW129, MW146, MW149, MW802D, MW802I, MW802S
	Northern Base boundary	**MW133**
	Former Mechanical Equipment Operations Maintenance Sections (MEOMS)	MW244
	Fuel Farm 1	MW278
	Fuel Farm 2	MW285
	Married Quarters	**OTH111**
	West of Katherine River	OTH112
Off base	Private property	MW134, MW135
	Landsdowne	**MW136**, **MW815**
	Katherine East	MW137, MW138, MW140
	Adjacent to Katherine River	MW142, **MW144**
	West of Katherine River	MW814, OTH114

Area	Description	SAQP Locations
	Uralla	MW400, **POT111**
	Off-Base Public land	OTH113
	Off-Base Government Property	OTH115
	Kalano Community	OTH120

Table 4 Biannual surface water sampling locations – March 2025 (Figure 11 & 12 in Appendix A)

Area	Description	SAQP Locations
Off-Base	Katherine River	SW100, SW108*, SW110, SW161
	Katherine YMCA Pool	**OTH008***
	Katherine Hot Springs	SW153*

*Locations that have changed from quarterly sampling frequency to biannual frequency in the most recent OMP (Defence, 2025) and therefore SAQP (AECOM, 2025) revision

Table 5 'Twice in wet season' surface water sampling locations – April 2025 (Figure 11 & 12 Appendix A)

Area	Description	SAQP Locations
On-Base	Tindal Creek	SW016, SW350, SW021 (off Base)
	Runway drain	SW188, SW049
	Drain off Fire Station Handstand	SW140

2.3 Deviations from the SAQP

The 2025 wet season sampling events included some deviations from the SAQP (AECOM, 2025), as outlined in **Table 6.**

Table 6 Deviations from the SAQPs during groundwater and surface water sampling events.

SAQP	Deviation	Impact on OMP
Collection of 50 biannual groundwater samples	Collection of 46 of 50 groundwater samples: • MW117, MW118S and MW119 were unable to be sampled due to root blockages. Field teams partially unblocked the wells, up to 9 metres below ground level (mbgl) using a root clearance tool, however, the blockage was at a deeper depth. Additional lengths of the root clearing tool are required to unblock the wells. • MW131 was unable to be sampled as it has been destroyed during dirt road grading after the wet season regrowth.	MW117 – Potential data gap for PFAS groundwater concentrations on the western boundary track. MW130 (long screened interval like MW117) to the north was able to be sampled, reducing the impact of this data gap (2 km spatial data gap). MW117 and MW130 overlap in screen intervals from 1 to 14.5 metres below ground level (m bgl). MW118S – Moderate data gap for PFAS groundwater concentrations on the western boundary track. Alternative wells listed on the SAQP were also blocked, and there are no other nearby wells screened at similar intervals. MW119 – Moderate data gap for PFAS groundwater concentrations on the western boundary track. Alternative wells listed on the SAQP were also blocked, and there are no other nearby screened wells at similar intervals. MW131 - Moderate data gap for PFAS groundwater concentrations migrating off the base. However, MW133 (long screened interval like MW131) that is further north was accessed and sampled, reducing the impact of this data gap. The SAQP did not have a alternative location listed.
Analysis of all groundwater samples for PFAS full suite standard analysis (LOR is 0.01 µg/L)	All Cossack private property groundwater samples were analysed for PFAS full suite low-level analysis (LOR of 0.002 µg/L) with the exception of the following that consistently report concentrations above the standard LOR: • POT112 • POT113 • POT120 • POT121 A select number of biannual groundwater samples from sentinel wells were analysed for PFAS full suite low-level analysis: • MW133 • MW136	No impact –PFAS low-level analysis provides these groundwater results with a lower detection level to improve understanding of PFAS distribution laterally to the west of Katherine River and within the furthest extents of the management area.

SAQP	Deviation	Impact on OMP
	• MW144 • MW815 • OTH111 • POT111	
Collection of six biannual surface water samples in March 2025	One location was not able to be sampled: • OTH008 was unable to be sampled as the sampling location was not accessible.	OTH008: No impact – the pool is closed whilst undergoing renovations, therefore eliminating potential risk during the closure period.

3.0 Sampling Methodology

3.1 Adopted Methodology

The methodologies adopted for the groundwater and surface water sampling events were in accordance with the SAQP (AECOM, 2025) and noting that deviations are captured in **Section 2.3.**

Table 7 Groundwater and surface water sampling methodology

Item	Details
Groundwater and surface water methodology	
Groundwater gauging	Depth to groundwater (metres below top of casing, mbTOC) was measured from monitoring well locations using a decontaminated oil/water interface probe within as close to 24-hours of each other as possible, prior to HydraSleeve deployment. Groundwater elevations were then determined in metres above the Australian Height Datum (mAHD) and used to infer groundwater flow direction. Groundwater gauging result tables are presented in **Appendix B**
Groundwater sampling	Private property groundwater samples were obtained from extraction bores during the three 'monthly in wet season' events. These samples were collected from existing taps on the headworks of the extraction bore. Samples were collected from the 'first-flush' from the tap. Biannual groundwater samples were collected using the no-purge method of HydraSleeves. The sampling sleeve was deployed after groundwater gauging, within the screened interval and left to rest for a minimum of 24-hours prior to sample collection. Groundwater sampling field result tables are presented in **Appendix B.**
Surface water sampling	Surface water samples were collected from either approximately 0.5 m below the surface, or mid-column for shallow sampling locations, with care taken to minimise collection of sediment or floating materials in the samples. At each location, laboratory supplied bottles were lowered into the water using a decontaminated aluminium sampling pole with the cap immediately applied once the container was full and retrieved from the water. Surface water sampling field result tables are presented in **Appendix B.**
Water quality parameters	Water quality parameters were recorded ex-situ, post-sample collection, using a YSI Pro Water Quality Meter. Water quality measurements recorded consisted of the following: temperature (°C), electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (reported as redox), and pH. Observations of odour, colour, and clarity (low, moderate or high turbidity) of the samples collected were recorded at each location. Refer to **Appendix C** for sampling logs and **Appendix D** for calibration records of the water quality meter.
QA/QC samples	For water sampling, field QA/QC samples included intra-laboratory duplicate and inter-laboratory duplicate samples collected at a rate of 1 in 10 primary samples, rinsate samples collected at a rate of one per day where decontaminated non-dedicated equipment was used, field blank samples at a rate of one per sampling day and trip blank samples at a rate of one per cooler. Refer to **Section 3.3** for assessment of QA/QC sample data with the data validation report provided in **Appendix E**.
Sample analysis	In accordance with the Data Quality Objectives (DQO) outlined in the SAQP (AECOM, 2025), samples collected were analysed for the extended PFAS suite

Item	Details
	at National Association of Testing Authorities' (NATA) accredited laboratories. Select few peripheral wells were scheduled for PFAS low level analysis to determine any trace concentrations of PFAS on the management area boundary. Primary and intra- laboratory duplicate samples were submitted to the primary laboratory, ALS Environmental Pty Ltd (ALS) Sydney, New South Wales (NSW). Inter-laboratory samples were sent to a secondary laboratory, National Measurement Institute (NMI) Sydney, NSW. Chain of Custody (COC) forms are presented in **Appendix F** and laboratory certificates are presented in **Appendix G.**

3.2 Adopted screening criteria

Screening criteria were selected on the basis of national guidance in the form of the PFAS National Environmental Management Plan, Defence estate and environmental strategies, and Defence PFAS-specific strategies and guidance. Guidance documents used to assess the dataset includes the following:

- Department of Health (DoH) Health Based Guidance Values for PFAS for use in site investigations in Australia (Department of Health, 2019)
- Heads of the Environment Protection Authority (HEPA), NEMP version 3.0 (HEPA, 2025)
- National Environment Protection (Assessment of Site Contamination) Measure 1999, Schedule B1, (ASC NEPM, 2013)

A summary of screening criteria used for groundwater and surface water matrices are presented in **Table 8**.

Table 8 Summary of adopted screening criteria for groundwater and surface water

Pathway	Compound	Criteria	Comment/reference
Human health receptors			
Drinking water	PFOS+PFHxS	0.07 µg/L	These values are from the PFAS NEMP 3.0 (HEPA, 2025)
	PFOA	0.56 µg/L	
Recreational use	PFOS+PFHxS	2 µg/L	These values are from PFAS NEMP 3.0 (HEPA, 2025)
	PFOA	10 µg/L	
Ecological receptors			
Freshwater - 99% species protection	PFOS	0.00023 µg/L	These values are from the PFAS NEMP 3.0 (HEPA, 2025) *The 99% level of protection has been applied for slightly to moderately disturbed ecosystems. This approach is generally adopted for chemicals that bioaccumulate and biomagnify in wildlife. For the purposes of preliminary screening of analytical water results, the laboratory LOR will be adopted rather than sole use of the criteria value.*
	PFOA	19 µg/L	

The drinking water guideline value has been applied to surface water as the town water supply is partially sourced from surface water from the Katherine River, and the interaction between surface and groundwater due to groundwater expressing through springs and surface water infiltrating into groundwater through sinkholes. The recreational water guideline value has also been applied to groundwater due to groundwater expressing through springs and the use of groundwater extraction for irrigation and recreational use such as the filling of private swimming pools and potentially public swimming pools.

Further to the adopted screening criteria, the OMP (Defence, 2025) outlines site-specific trigger points that data are to be reviewed against. The OMP triggers are summarised in **Table 9** with recommended actions (if triggers are met) presented in the OMP (Defence, 2025).

Table 9 OMP Trigger Points

Locations	Trigger Point
Groundwater locations previously below laboratory LOR for PFAS	First time detection of PFAS compounds in groundwater
Groundwater locations within specific management zones	PFAS concentrations in groundwater that reported above the designated management zone criteria or an identified change in the risk profile resulting from the reported concentration.
Private bores in Cossack	Exceedance of PFAS compounds in private property groundwater above the adopted drinking water health-based screening level. Or PFOS+PFHxS and/or sum of PFAS concentrations in the bore show an increasing trend (using trend analysis).
Private bore on Uralla Road (POT111)	Concentrations of PFAS are reported in POT111 which indicate an increase in plume size or concentrations above drinking water guidelines.
Northwestern sentinel well located on Gorge Road east of Katherine River (MW815)	Detectable concentrations of PFAS are reported in MW815.
On-base location (MW133)	Concentrations of PFOS+PFHxS and/or Sum of PFAS concentrations show an increasing trend (using statistical analysis) over two years of monitoring at MW133.
Off-base location on public land (MW136)	Detectable concentrations of PFAS are reported in MW136.
All groundwater and surface water locations	Change of PFAS drinking water guideline values.

3.3 Data quality objectives and data validation

The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2025).

The analytical data can be used as a basis for interpretation, subject to the limitations outlined below.

February 2025 event:

- The potential exists for PFOS to be above the adopted PFAS Freshwater 99% Species Protection guideline (0.00023 µg/L) but below the laboratory LOR (0.01 µg/L) for the following primary samples which should be taken into consideration when interpreting PFOS results against guidelines where results are reported below the LOR:
  - 0990_OTH118_250217
  - 0990_POT114_250217
  - 0990_POT126_250217
  - 0990_POT127_250217
  - 0990_POT128_250217

- 0990_POT130_250217
- 0990_POT131_250217
- 0990_POT198_250217
- 0990_POT201_250217

March 2025 event:

- The potential exists for PFOS to be above the adopted PFAS Freshwater 99% Species Protection guideline (0.00023 µg/L), but below the laboratory LOR (0.01 µg/L) for the following primary samples which should be taken into consideration when interpreting PFOS results against guidelines where results are reported below the LOR:
  - 0990_POT125_250317
  - 0990_POT128_250317
  - 0990_OTH118_250318
  - 0990_POT126_250317
  - 0990_POT127_250318
  - 0990_POT130_250318
  - 0990_POT131_250317
  - 0990_POT198_250318
  - 0990_POT201_250318
  - 0990_SW100_250319
  - 0990_SW108_250319
  - 0990_SW110_250319
  - 0990_SW161_250319

April 2025 event:

- The potential exists for PFOS to be above the adopted PFAS Freshwater 99% Species Protection guideline (0.00023 µg/L), but below the laboratory LOR (0.01 µg/L) for the following primary samples which should be taken into consideration when interpreting PFOS results against guidelines where results are reported below the LOR:
  - 0990_POT125_250414
  - 0990_OTH118_250415
  - 0990_POT126_250414
  - 0990_POT128_250415
  - 0990_POT198_250414
  - 0990_POT127_250415
  - 0990_POT130_250415
  - 0990_POT201_250415
- Elevated RPDs for PFHxS, PFHpS, PFOS and 6:2 FTS in primary batch ES2510860 should be taken into consideration when using the data quantitatively. However, the elevated RPDs are not expected to affect the interpretation against the selected criteria.

April-May 2025 event:

- Elevated RPDs of PFOS and PFOA in both primary lab batches (ES2513390 and ES2513389) should be taken into consideration when using the data quantitatively. However, the elevated RPDs are not expected to affect the interpretation against the selected criteria.

The April-May 2025 biannual GME was completed concurrently with the project's Service Package 2b soil remediation medium term performance monitoring scope of work. The data have been assessed as one single event and therefore some duplicate parent samples may reflect these non-OMP locations.

Data validation procedures employed in the assessment of the field and laboratory QA/QC data are indicative that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report. An examination of sampling analytical data compared to the data validation findings did not result in any results that required flagging for potential inaccuracies.

The full data validation report is provided in **Appendix E.** All data collected during this event has been reviewed and uploaded to the Defence ESdat database in accordance with DCMM (Defence, 2021b) Annex L requirements.

4.0 Results and Discussion

4.1 Groundwater

4.1.1 Groundwater field observations and measurements

Table 10 Groundwater observations and field measurements for February, March, April and May 2025 sampling events

Compound	Criteria
Fieldwork dates	The three 'monthly in wet season' groundwater sampling events were completed on: • 17 to 18 February 2025 • 17 to 18 March 2025 • 14 to 15 April 2025, one location was collected on the 30 April 2025. The biannual groundwater sampling event was completed between 30 April and 8 May 2025 with the resampling of MW815 being completed on the 6 June 2025.
Access and sample collection	**February 2025 event:** All locations for the 'monthly in wet season' groundwater sampling event in February 2025 were accessed and sampled. **March 2025 event:** All locations for the 'monthly in wet season' groundwater sampling event in March 2025 were accessed and sampled. **April 2025 event:** All locations for the 'monthly in wet season' groundwater sampling event in April 2025 were accessed and sampled. **April - May 2025 event:** All locations for the biannual groundwater sampling event in May 2025 were accessed and sampled except for: - MW117, MW118, MW119 which were impacted by roots - MW131 which was destroyed by road dirt track grading.
Groundwater levels	During the biannual sampling event in April and May 2025, groundwater levels were measured from monitoring wells only, as extraction bores do not permit access for groundwater level measurements. Standing water levels ranged from 1.377 mbTOC (MW127) to 17.154 mbTOC (MW135). Groundwater elevations were then calculated using available top of casing elevation data in metres above the Australian Height Datum (mAHD) and ranged from 89.059 mAHD (MW814) to 133.531 mAHD (OTH111). Elevations are presented in **Table T3a** (**Appendix B).** Inferred groundwater flows are from southeast to northwest, towards Katherine Township and River as shown in **Figure F8 (Appendix A**).The recorded groundwater levels collected during the April and May 2025 event were lower than average wet season levels at the respective locations.
Water quality parameters	Water quality parameters were taken during sample collection using a YSI Pro Water Quality Meter. Stabilised readings are presented in **Table T1 and T3b (Appendix B).** **February 2025 event (Private bore monthly in wet season):** • DO ranged from 1.01 mg/L (POT124) to 5.76 mg/L (OTH117) indicating low oxygenated to well oxygenated water conditions.

Compound	Criteria
	• EC ranged from 496 µS/cm (POT131) to 1,052 µS/cm (POT128) indicating freshwater conditions. • pH ranged from 7.32 (OTH119) to 8.0 (POT126, POT127) indicating near neutral conditions. • Redox (corrected) ranged from 276.5 mV (POT128) to 339.7 mV (POT201) indicating moderately reducing conditions. **March 2025 event ('Private bore monthly in wet season'):** • DO ranged from 0.47 mg/L (POT198) to 3.62 mg/L (POT121) indicating low oxygenated to moderately oxygenated water conditions. • EC ranged from 509 µS/cm (POT131) to 993 µS/cm (OTH119) indicating freshwater conditions. • pH ranged from 7.08 (POT112) to 7.59 (POT120) indicating neutral conditions. • Redox (corrected) ranged from 318.0 mV (POT121) to 430.4 mV (POT112) indicating mildly to moderately reducing conditions. **April 2025 event (Private bore monthly in wet season)** • DO ranged from 1.43 mg/L (POT114) to 8.81 mg/L (POT127) indicating low oxygenated to well oxygenated conditions. • EC ranged from 133.6 µS/cm (POT127) to 1,126 µS/cm (OTH119) indicating freshwater conditions. • pH ranged from 5.98 (OTH119) to 8.34 (POT127) indicating slightly acidic to alkaline conditions. • Redox (corrected) ranged from 219.6 mV (POT130) to 298.6 mV (POT120) indicating moderately reducing conditions. • **April-May 2025 event (Biannual groundwater event):** • DO ranged from 0.32 mg/L (MW146) to 7.72 mg/L (POT111) indicating low oxygenated to well oxygenated conditions. • EC ranged from 214.6 µS/cm (MW231) to 1,346 µS/cm (MW803I) indicating freshwater conditions. • pH ranged from 6.08 (MW231) to 8.90 (MW285) indicating neutral to alkaline conditions. • Redox (corrected) ranged from 32.8 mV (MW109) to 397.5 mV (OTH113) indicating mildly to moderately reducing conditions.

4.1.2 Groundwater analytical results

The PFAS groundwater analytical results from the February – May 2025 sampling events are presented in **Table T2 and Table T4 (Appendix B)** and visually presented in **Figures F2 – F10 (Appendix A).**

Analytical results from the biannual and private bore sampling events were consistent with the historical data set, with further discussion of any deviations from the SAQP (AECOM, 2025) that occurred in **Section 2.3**. Locations that met any of the OMP trigger point criteria are shown in **Table 11.**

Table 11 Locations that meet OMP trigger criteria for analytical results

OMP Trigger	Location ID	PFOS+PFHxS concentration (µg/L)
		End of wet season 2025
First time detection of PFAS compounds in groundwater	MW814	0.060 µg/L (May 2025)
	MW815	0.187 µg/L (May 2025)
Exceedance of human health criteria for PFOS+PFHxS in Cossack private property bores	OTH117	0.113 µg/L (February 2025)
	POT113	0.498 µg/L (February 2025)

OMP Trigger	Location ID	PFOS+PFHxS concentration (µg/L)
		End of wet season 2025
		0.380 µg/L (March 2025) 1.630 µg/L (April 2025)

MW814 and MW815 were installed in November 2024 to replace inaccessible private property locations POT122 and POT119 respectively. Therefore, the April-May 2025 biannual event was the first time that these monitoring wells were sampled. Results from MW814 are consistent with results from nearby POT122 that is no longer accessible. Whereas MW815 results are not consistent with POT119 results that have consistently reported below the LOR historically.

OTH117 and POT113 have historically reported concentrations of PFOS+PFHxS above the drinking water criteria. Property owners have been informed of the human health risks associated with utilising their bore water for potable use. Provision of alternative water supply has been provided at these properties.

Monitoring locations with reported PFOS+PFHxS concentrations above their assigned PMAP (Defence, 2019) designated management zone concentration ranges for groundwater are presented in **Table 12**. The management zone ranges are shown in **Figure F1 (Appendix A).**

Table 12 Locations reported PFOS+PFHxS concentrations above the PMAP designated management zones

Assigned Zone	Private Property Event February 2025	Private Property Event March 2025	Private Property Event April 2025	Biannual Event April-May 2025
1 – Groundwater > Recreation Water Criteria (2 µg/L)	Nil	Nil	Nil	Nil
2 – Groundwater > Drinking Water Criteria (0.07 µg/L)	Nil	Nil	Nil	Nil
5 – Groundwater < Criteria (<0.07 µg/L)	OTH117 (0.113 µg/L) POT113 (0.498 µg/L)	POT113 (0.380 µg/L)	POT113 (1.630 µg/L)	MW815 (0.187 µg/L)

Private property groundwater bore locations OTH117 and POT113 are to be assessed for potential increasing trends of PFOS+PFHxS concentrations within the OMR 2025 report.

MW815 has replaced the Gorge Road private property location POT119 in the OMP (Defence, 2025), north of Katherine location. Access to the property where POT119 is located has not been granted since last sampled in April 2021. The new location (MW815) is on the border of Zone 5 (PFOS+PFHxS to be <0.07ug/L) and Zone 2 (PFOS+PFHxS to be >0.07 ug/L) of the PFAS Management Area and therefore first-time detection of PFOS+PFHxS (0.187 ug/L) is not unexpected, however, the reported concentration is above the drinking water criteria. As there is no other well north of this location near the east side of the river, there is currently a data gap in determining the plume boundary and drinking water criteria boundary in this area. As MW815 reported above the designated management zone criteria, the location was resampled on 6 June 2025 and confirmed that groundwater at this location is above the drinking water guideline value. Further evaluation will be conducted to determine if additional sampling or sampling locations are required at MW815 or north of this location to identify the northern plume boundary near the east side of Katherine River.

4.2 Surface water

4.2.1 Surface water field observations and measurements

Table 13 Surface water observations and field measurements for March and April 2025 sampling events

Compound	Criteria
Fieldwork dates	The biannual surface water sampling events occurred on 19 March 2025. The 'twice in wet season' water sampling events were completed on 1 April 2025.
Access and sample collection	All surface water sampling locations were accessible and able to be sampled during the March 2025 sampling event with the exception of location OTH008 due to the temporary closure of the pool for renovations.
Field observations	**Biannual event March 2025:** Katherine River generally had high flows with low turbidity, no odour or sheen. The Katherine Hot Springs were noted to be colourless with low turbidity, no odour, and no sheen. **Twice in wet season event April 2025:** Tindal Creek and on-Base drains had variable flow, and water was noted to be colourless, low turbidity with no odour or sheen. SW350, located on-Base Tindal Creek, was noted to be colourless with high flow, no odour or sheen. Foam was observed on the surface of the water at location SW049.
Surface water flow	The Katherine River level was recorded as being at approximately 2.061 m at the Katherine River Railway Bridge on 19 March 2025 and approximately 5.054 m on 1 April 2025,recorded from Station G814001. The March 2025 measurement is lower than the average river height for the end of wet season months, whereas the April 2025 measurement is consistent with the average which is 4.990 m (Northern Territory Department of Lands, Planning and Environment, 2025).
Water quality parameters	Stabilised water quality parameter readings are presented in **Table T5 (Appendix B)** and are summarised below per event. **Biannual event 19 March 2025:** • DO ranged from 2.29 mg/L (SW153) to 4.34 mg/L (SW161) indicating low to moderately oxygenated water. • EC ranged from 40.7 µS/cm (SW161) to 699 µS/cm (SW153) indicating freshwater conditions. • pH ranged from 7.15 (SW108) to 7.24 (SW110, SW161) indicating neutral conditions. • Redox (corrected) ranged from 300.4 mV (SW110) to 319.1 mV (SW100) indicating moderately reducing conditions. **'Twice in wet season' event 1 April 2025:** • DO ranged from 1.23 mg/L (SW049) to 1.55 mg/L (SW188) indicating low oxygenated water. • EC ranged from 393.8 µS/cm (SW049) to 852 µS/cm (SW021) indicating freshwater conditions. • pH ranged from 8.22 (SW188) to 8.51 (SW021) indicating slightly alkaline conditions. • Redox (corrected) ranged from 251.1 mV (SW021) to 266.2 mV (SW049) indicating moderately reducing conditions.

4.2.2 Surface water analytical results

Analytical results from the annual, biannual and quarterly surface water sampling events were consistent with the historical data set. Discussion of any deviations from the SAQP (AECOM, 2025) that occurred are presented in **Section 2.3**. There were no OMP trigger point exceedances from these results.

The PFAS surface water analytical results from the February - April 2025 sampling events are shown visually in **Figure F11 and F12 (Appendix A)** and presented in **Table T6 (Appendix B)**.

5.0 Summary and next sampling events

5.1 Summary of monitoring events

Findings from the end of wet season monitoring period and recommended actions are summarised in **Table 14.**

Table 14 Summary of sampling events

Item	Comment	Recommended Actions
18 'monthly in wet season' private bores were collected in February, March and April 2025.	No deviations to the SAQP (AECOM, 2025). All results were consistent with the historical dataset.	Continue monitoring in accordance with the SAQP and PMAP with selected locations to be analysed for PFAS full suite (low level).
Five of six biannual surface water samples were collected in March 2025.	The Katherine Town Pool (OTH008) has been closed for renovations for the past three events. As this location monitors for potential health risks from PFAS within the swimming pool, there are no potential risk to the public while the pool is not in operation. Results for the remaining five biannual locations were sampled in accordance with the SAQP (AECOM, 2025) and results were consistent with the historical dataset.	OTH008 will be sampled upon completion of the facility renovations. Continue monitoring in accordance with the SAQP and PMAP.
Six twice in wet season surface water samples were collected in April 2025	No deviations to the SAQP (AECOM, 2025). All results were consistent with the historical dataset.	Continue monitoring in accordance with the SAQP and PMAP.
Forty-six of 50 biannual groundwater were sampled in April-May 2025	Four locations were not able to be sampled: • MW117, MW118 and MW119 were unable to be sampled due to root blockages. Field teams unblocked the well up to 9 m bgl. Additional lengths of the root clearing tool are required. • MW131 was unable to be sampled as it has been destroyed.	Routine maintenance should be included during sampling events with additional root removal lengths utilised to clear deeper sections of wells during future sampling rounds. MW131 along the northern transect should be replaced. Continue monitoring in accordance with the SAQP and PMAP.
Analysis for PFAS full suite (low-level analysis)	Select private property locations that consistently report below the LOR for standard suite and plume boundary wells were scheduled for low level analysis to determine trace levels (if present) in private property bores and on the boundary of the plume.	Low-level analysis will be utilised at locations where concentrations are regularly near or below the LOR on a case-by-case basis, with regular reviews conducted to determine if low-level analysis at individual locations would be beneficial to the program.

Table 15 OMP trigger point

Trigger Point	Comment	Recommended Actions
First time detection of PFAS compounds in groundwater	• MW814 reported concentrations of sum of PFOS+PFHxS at 0.06 µg/L. • MW815 reported concentrations of sum of PFOS+PFHxS at 0.187 µg/L.	The spatial extent of the PFAS plume will be reviewed during the next OMR to determine if additional sampling or sampling locations are required at MW815 or north of this location. Continue monitoring in accordance with the SAQP and PMAP.
PFAS concentrations in groundwater that reported above the designated management zone criteria or an identified change in the risk profile resulting from the reported concentration.	• MW815 is located within Zone 5 where concentrations are expected to be below the human health criteria (0.07 µg/L). MW815 reported concentrations of PFOS+PFHxS to 0.187 µg/L during the biannual event.	MW815 was resampled on 6 June 2025 and confirmed that groundwater at this location is above the drinking water guideline value. Further evaluation will be conducted to determine if additional sampling or sampling locations are required at MW815 or north of this location to identify the northern plume boundary near the east side of Katherine River. Continue monitoring in accordance with the SAQP and PMAP.
Exceedance of PFAS compounds in private property groundwater above the adopted drinking water health-based screening level. Or PFOS+PFHxS and/or sum of PFAS concentrations in a bore show an increasing trend (using trend analysis).	• OTH117 reported above the drinking water criteria in February 2025 event • POT113 reported above the drinking water criteria in February, March and April 2025 events.	Trend analysis for potential increasing trends of PFOS+PFHxS and/or sum of PFAS will be completed as part of the OMR 2025. Continue monitoring in accordance with the SAQP and PMAP.
Concentrations of PFAS are reported in POT111 which indicate an increase in plume size or concentrations above drinking water guidelines.	Concentrations of PFAS at POT111 were reported below the LOR during the biannual sampling event in April-May 2025.	Continue monitoring in accordance with the SAQP and PMAP.
Detectable concentrations of PFAS are reported in MW815.	MW815 reported concentrations of PFOS+PFHxS to be 0.187 µg/L during the biannual sampling event in April-May 2025.	MW815 was resampled on 6 June 2025 and confirmed that groundwater at this location is above the drinking water guideline value. Further evaluation will be conducted to determine if additional sampling or sampling locations are required at MW815 or north of this location to identify the northern plume

Trigger Point	Comment	Recommended Actions
		boundary near the east side of Katherine River. Continue monitoring in accordance with the SAQP and PMAP.
Concentrations of PFOS+PFHxS and/or Sum of PFAS concentrations show an increasing trend (using statistical analysis) over two years of monitoring at MW133.	This will be evaluated in the 2025 OMR.	Continue monitoring in accordance with the SAQP and PMAP.
Detectable concentrations of PFAS are reported in MW136	Concentrations of PFAS at MW136 were reported below the LOR during the annual sampling event in April-May 2025.	Continue monitoring in accordance with the SAQP and PMAP.
Change of PFAS drinking water guideline values.	N/A	Continue monitoring in accordance with the SAQP and PMAP.

5.2 Upcoming sampling events

The next groundwater sampling event will be the ‘once in dry season’ groundwater sampling, which will occur in August 2025.

The next surface water sampling event will be the annual and biannual events between September and October 2025.

6.0 References

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Appendix A

Figures

Appendix A Figures

Figure F1 PFAS Management Area

Figure F2 Sum of PFOS+PFHxS Concentrations for Private Property Groundwater Locations February 2025 Sampling Event

Figure F3 PFOA Concentrations for Private Property Groundwater Locations February 2025 Sampling Event

Figure F4 Sum of PFOS+PFHxS Concentrations for Private Property Groundwater Locations March 2025 Sampling Event

Figure F5 PFOA Concentrations for Private Property Groundwater Locations March 2025 Sampling Event

Figure F6 Sum of PFOS+PFHxS Concentrations for Private Property Groundwater Locations April 2025 Sampling Event

Figure F7 PFOA Concentrations for Private Property Groundwater Locations April 2025 Sampling Event

Figure F8 Inferred Groundwater Flow and Elevation Contours April-May 2025

Figure F9 Sum of PFOS+PFHxS Concentrations for On- and Off-Base Groundwater Locations April-May 2025 Sampling Event

Figure F10 PFOA Concentrations for On- and Off-Base Groundwater Locations April-May 2025 Sampling Event

Figure F11 Sum of PFOS+PFHxS Concentrations for Surface Water Locations March-April 2025 Sampling Event

Figure F12 PFOA Concentrations for Surface Water Locations March-April 2025 Sampling Event

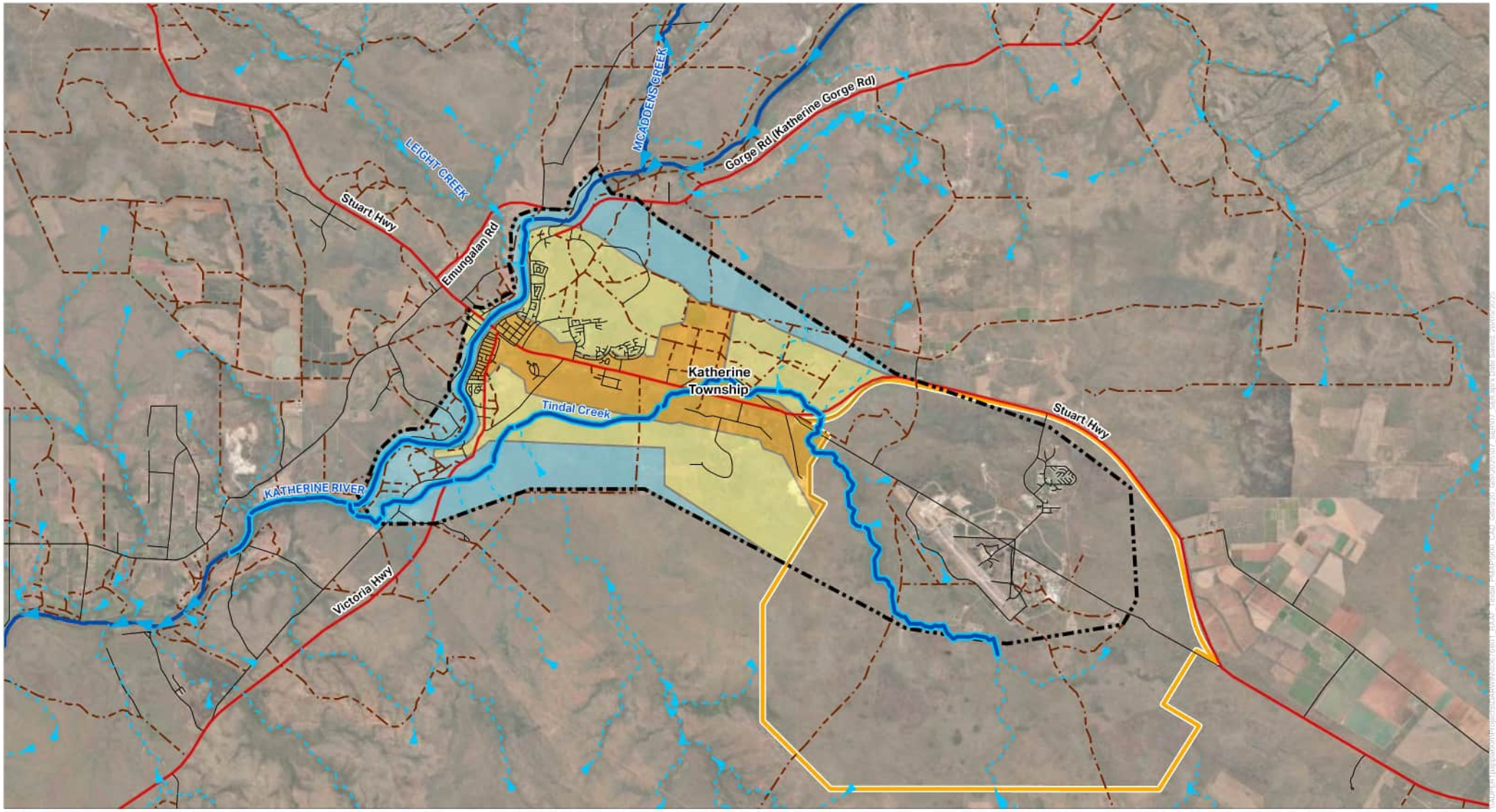

FIGURE F1: PFAS MANAGEMENT AREA

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage
- Zone 1 Groundwater > Recreational Water Criteria
- Zone 2 Groundwater > Drinking Water Criteria
- Zone 5 Groundwater < Criteria

Note:

Zone 4 - Treated Town Water Supply - Not shown

N

0 1 2 3 km

AECOM

PROJECT

PFAS Ongoing Monitoring Plan
RAAF BASE TINDAL
Wet Season 2025 Sampling Event Report

CLIENT

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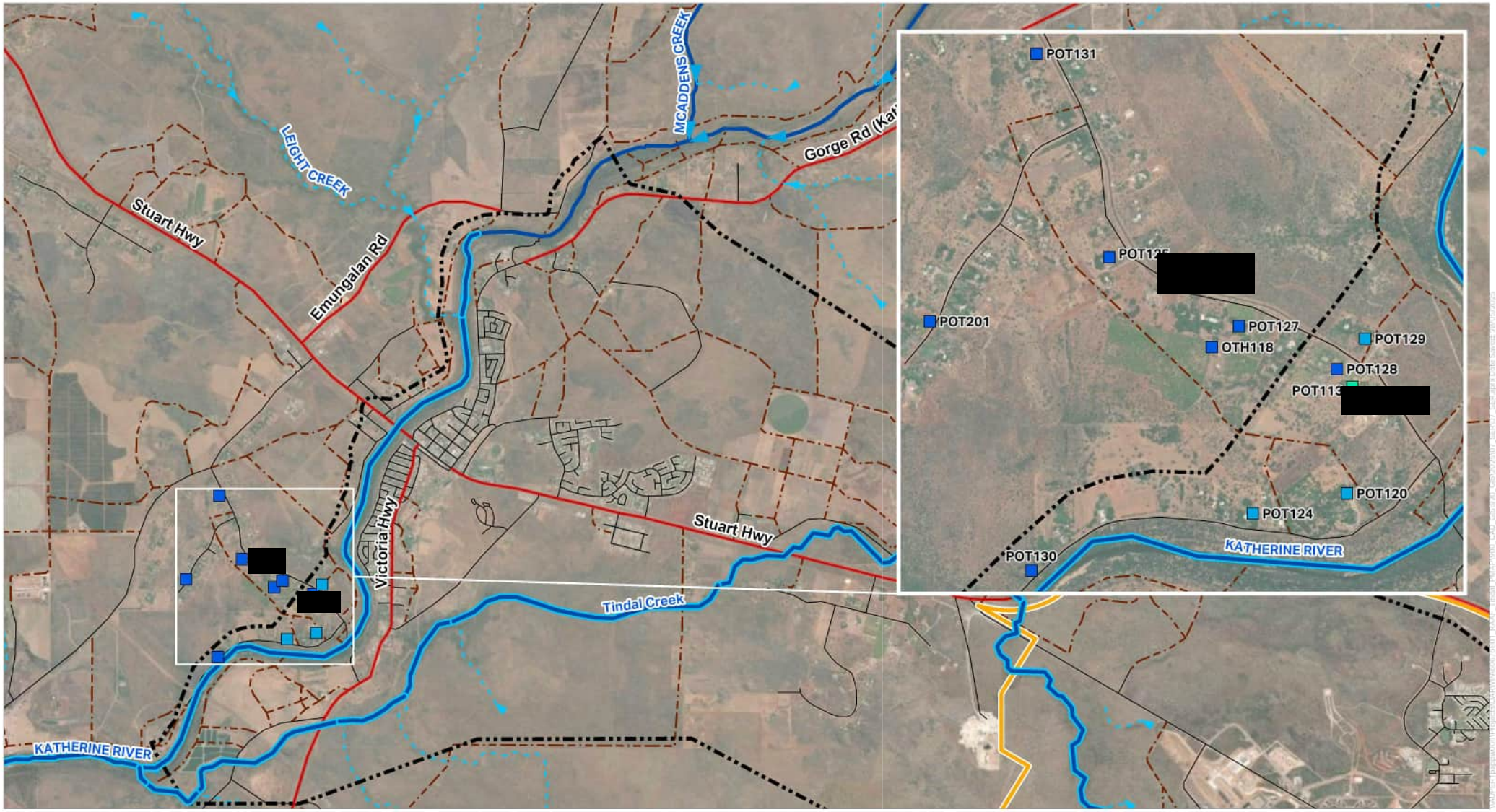

FIGURE F2: SUM OF PFOS + PFHxS CONCENTRATIONS FOR PRIVATE PROPERTY GROUNDWATER LOCATIONS FEBRUARY 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOS + PFHxS (µg/L)

- > 50
- 10 -50
- 2 - 10
- 0.07 - 2
- 0.01 - 0.07
- < 0.01

Note:

OTH117, OTH119, POT114, POT121, POT198 not shown for privacy reasons.

N

0 1 2 km

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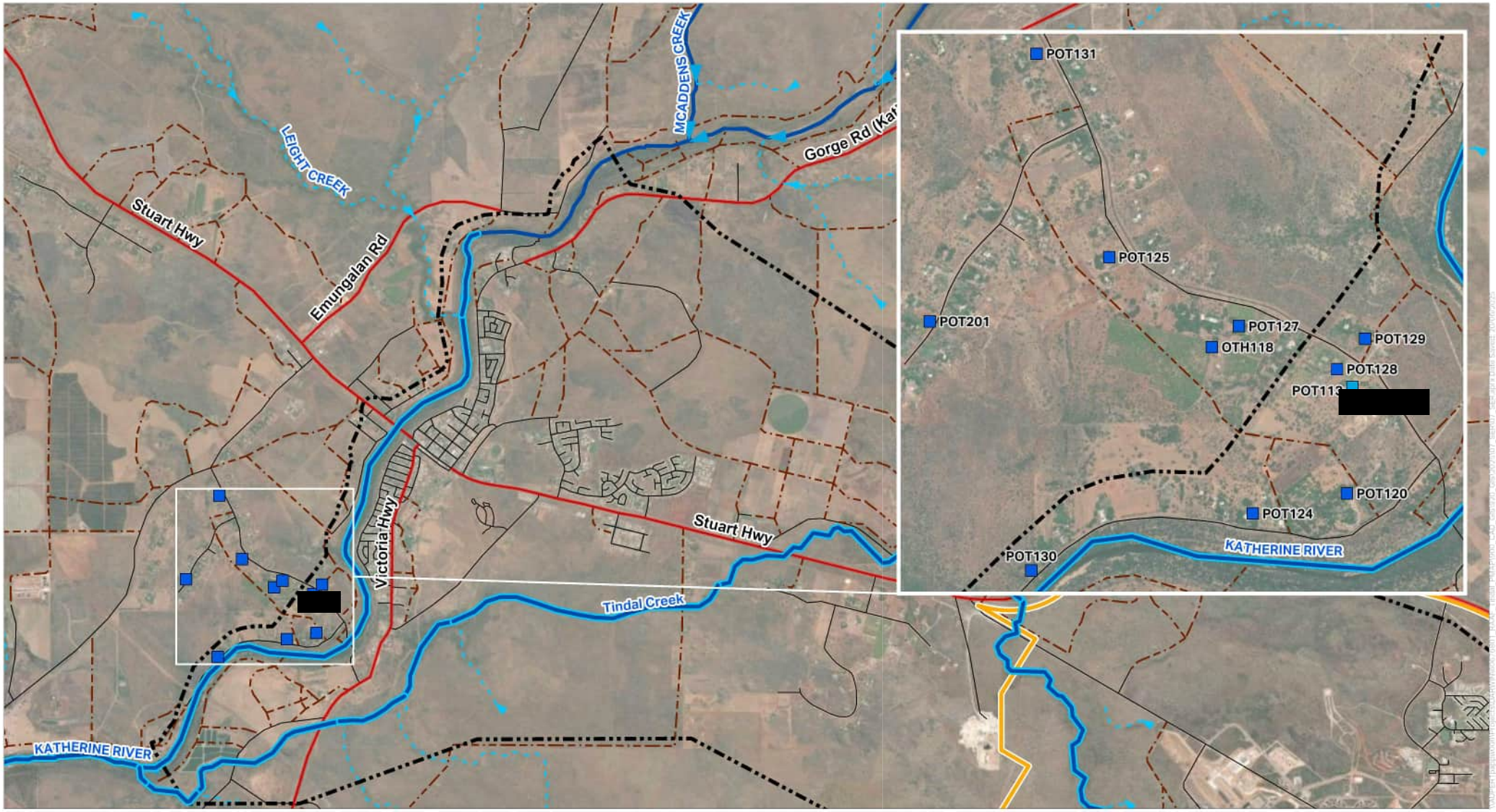

FIGURE F3: PFOA CONCENTRATIONS FOR PRIVATE PROPERTY GROUNDWATER LOCATIONS FEBRUARY 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOA (µg/L)

- > 19
- 10 - 19
- 0.56 - 19
- 0.01 - 0.56
- < 0.01

Note:

OTH117, OTH119, POT114, POT121, POT126, POT198 not shown for privacy reasons.

N

0 1 2 km

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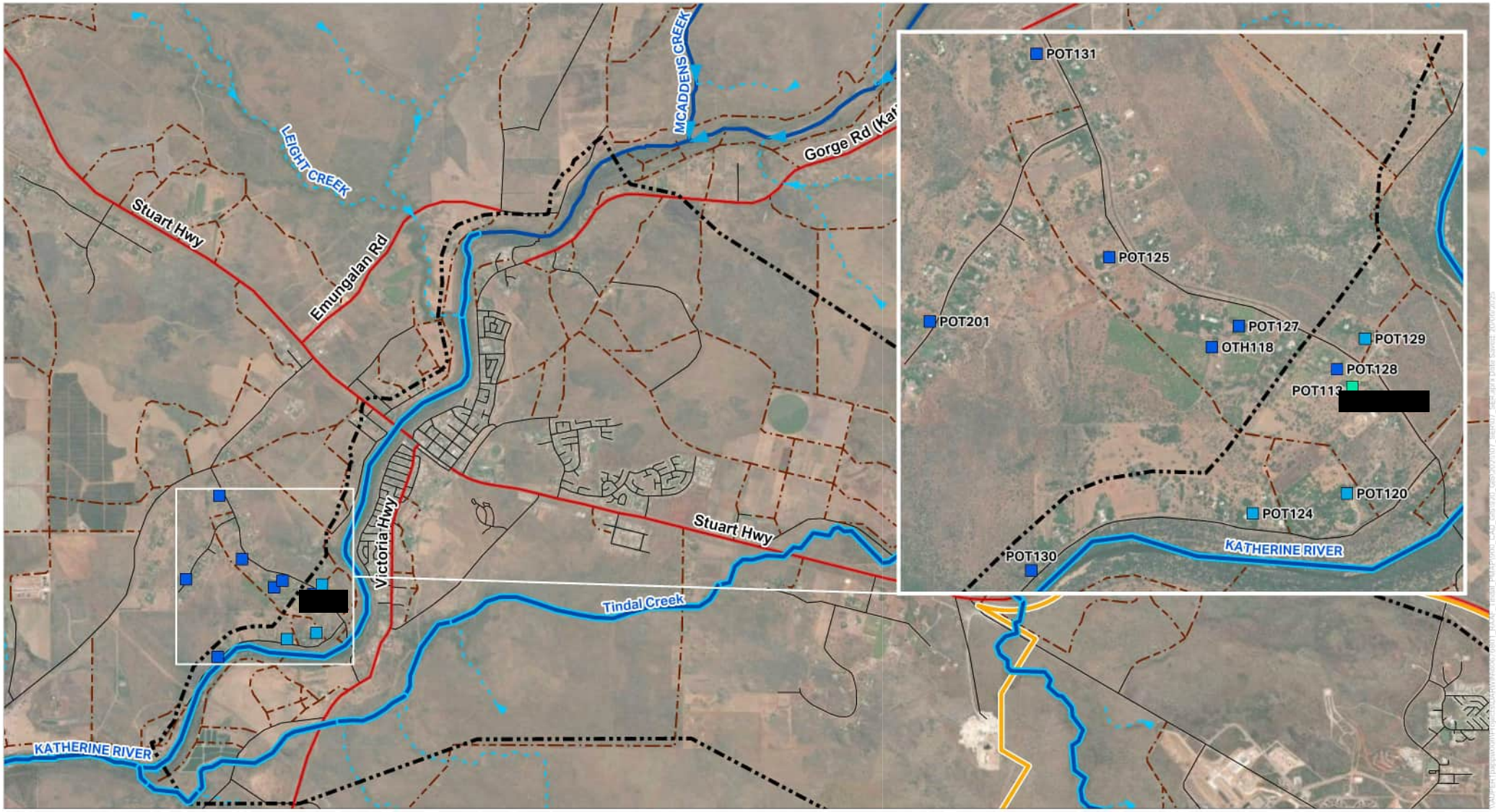

FIGURE F4: SUM OF PFOS + PFHxS CONCENTRATIONS FOR PRIVATE PROPERTY GROUNDWATER LOCATIONS MARCH 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOS + PFHxS (µg/L)

- > 50
- 10 -50
- 2 - 10
- 0.07 - 2
- 0.01 - 0.07
- < 0.01

Note:

OTH117, OTH119, POT114, POT121, POT126, POT198 not shown for privacy reasons.

N

0 1 2 km

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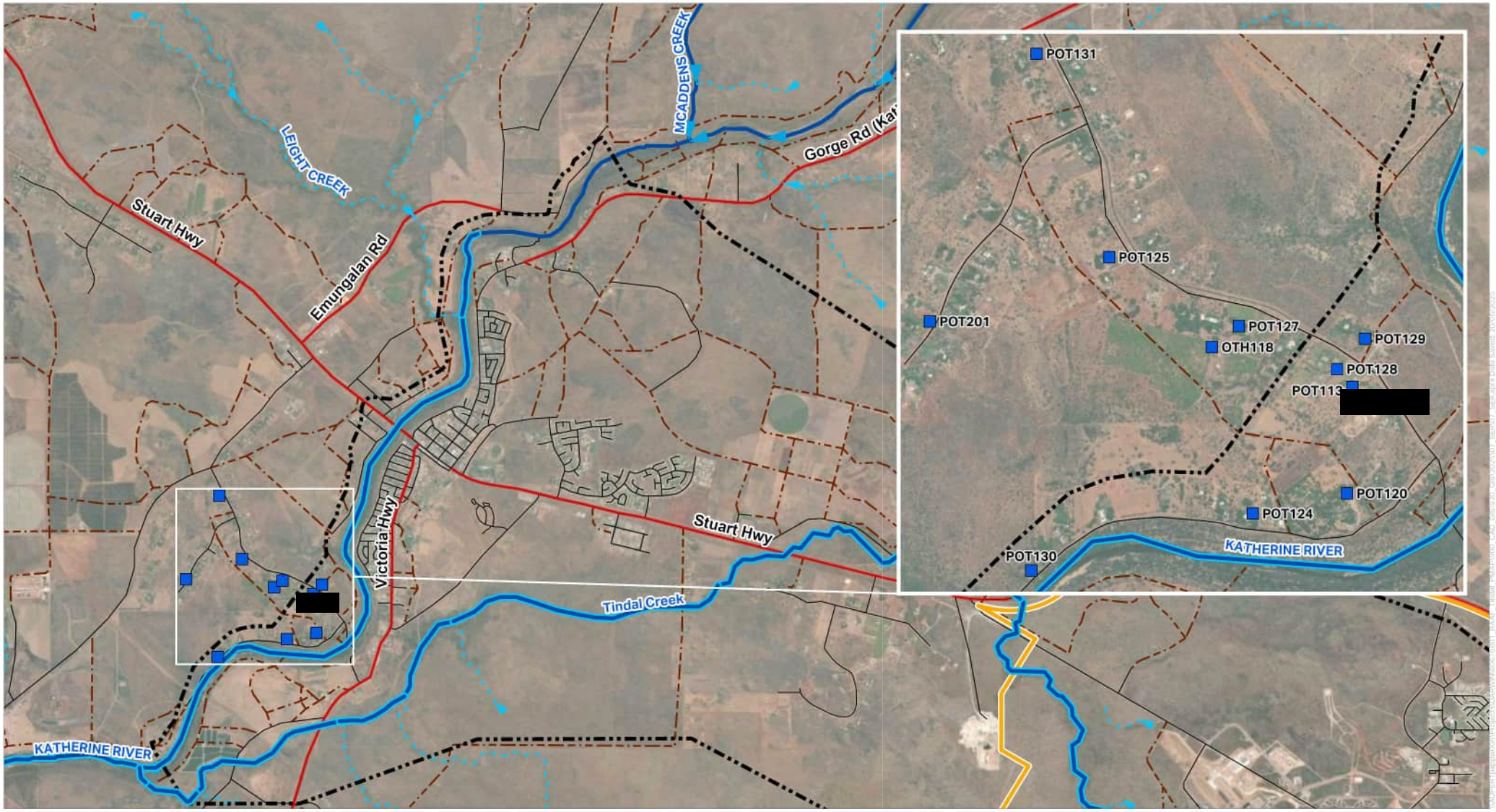

FIGURE F5: PFOA CONCENTRATIONS FOR PRIVATE PROPERTY GROUNDWATER LOCATIONS MARCH 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOA (µg/L)

- > 19
- 10 - 19
- 0.056 - 10
- 0.01 - 0.56
- < 0.01

Note:

OTH117, OTH119, POT114, POT121, POT126, POT198 not shown for privacy reasons.

N

0 1 2 km

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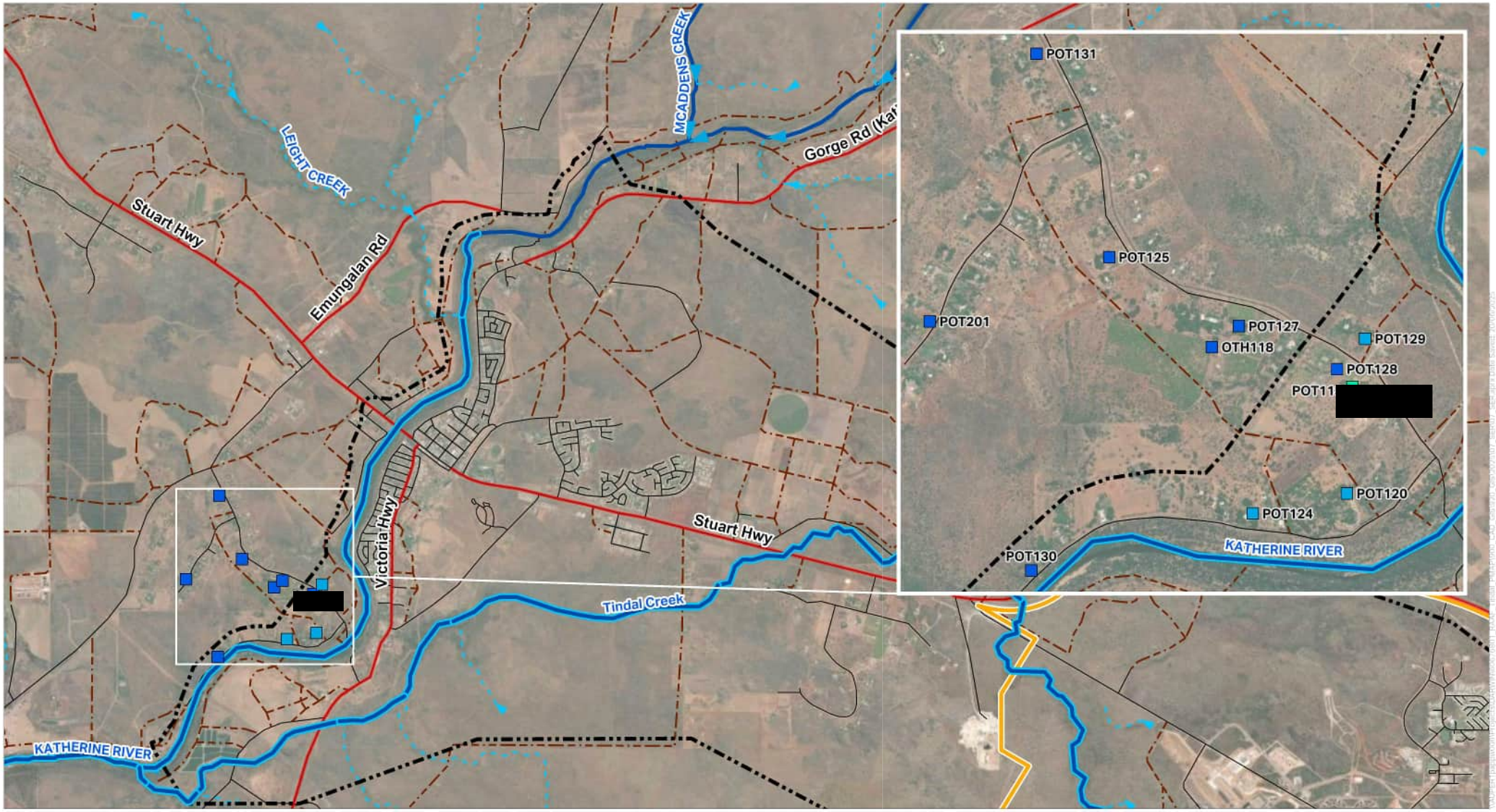

FIGURE F6: SUM OF PFOS + PFHxS CONCENTRATIONS FOR PRIVATE PROPERTY GROUNDWATER LOCATIONS APRIL 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOS + PFHxS (µg/L)

- > 50
- 10 - 50
- 2 - 10
- 0.07 - 2
- 0.01 - 0.07
- < 0.01

Note:

OTH117, OTH119, POT114, POT121, POT126, POT198 not shown for privacy reasons.

N

0 1 2 km

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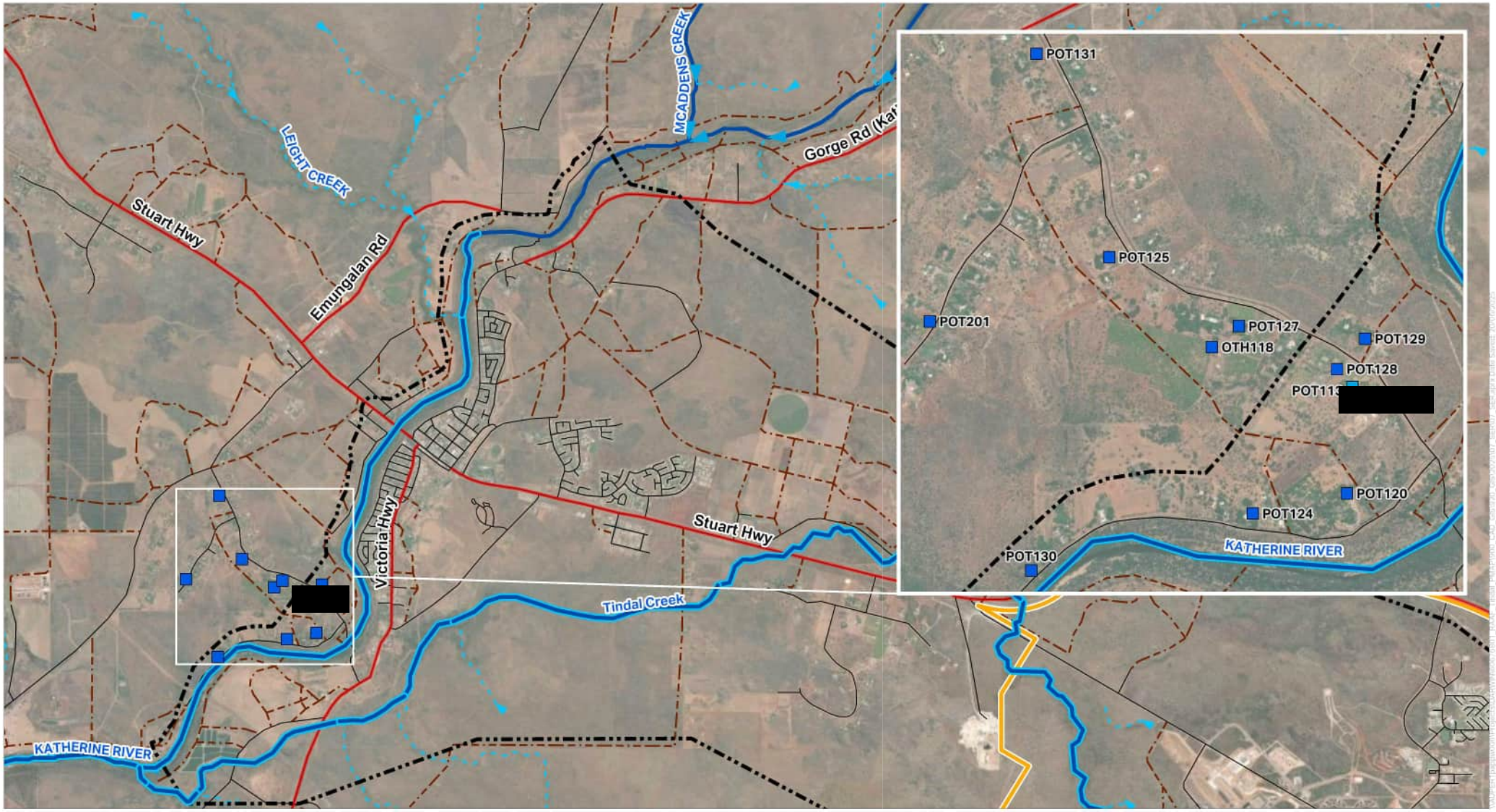

FIGURE F7: PFOA CONCENTRATIONS FOR PRIVATE PROPERTY GROUNDWATER LOCATIONS APRIL 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOA (µg/L)

- > 19
- 10 -19
- 0.56 -10
- 0.01 - 0.56
- > 0.01

Note:

OTH117, OTH119, POT114, POT121, POT126, POT198 not shown for privacy reasons.

N

0 1 2 km

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Source: World Imagery: Earthstar Geographics

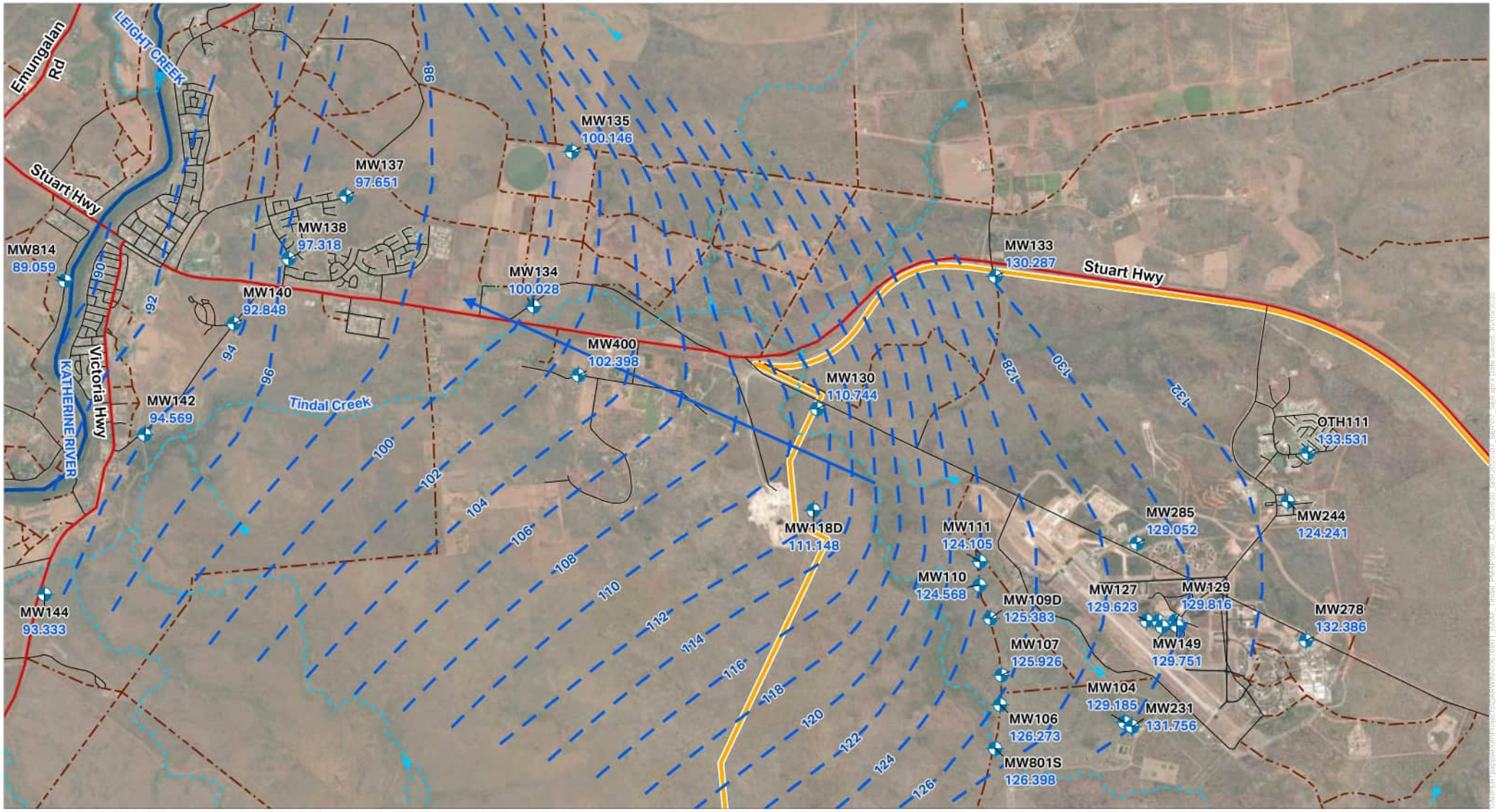

FIGURE F8: INFERRED GROUNDWATER FLOW AND ELEVATION CONTOURS APRIL - MAY 2025

Legend

- RAAF Base Tindal
- Highway
- Road
- Track
- Katherine River
- Drainage
- Annual Groundwater Locations
- Inferred Groundwater Level (mAHD)
- Inferred Groundwater Direction

N

0 1 2 km

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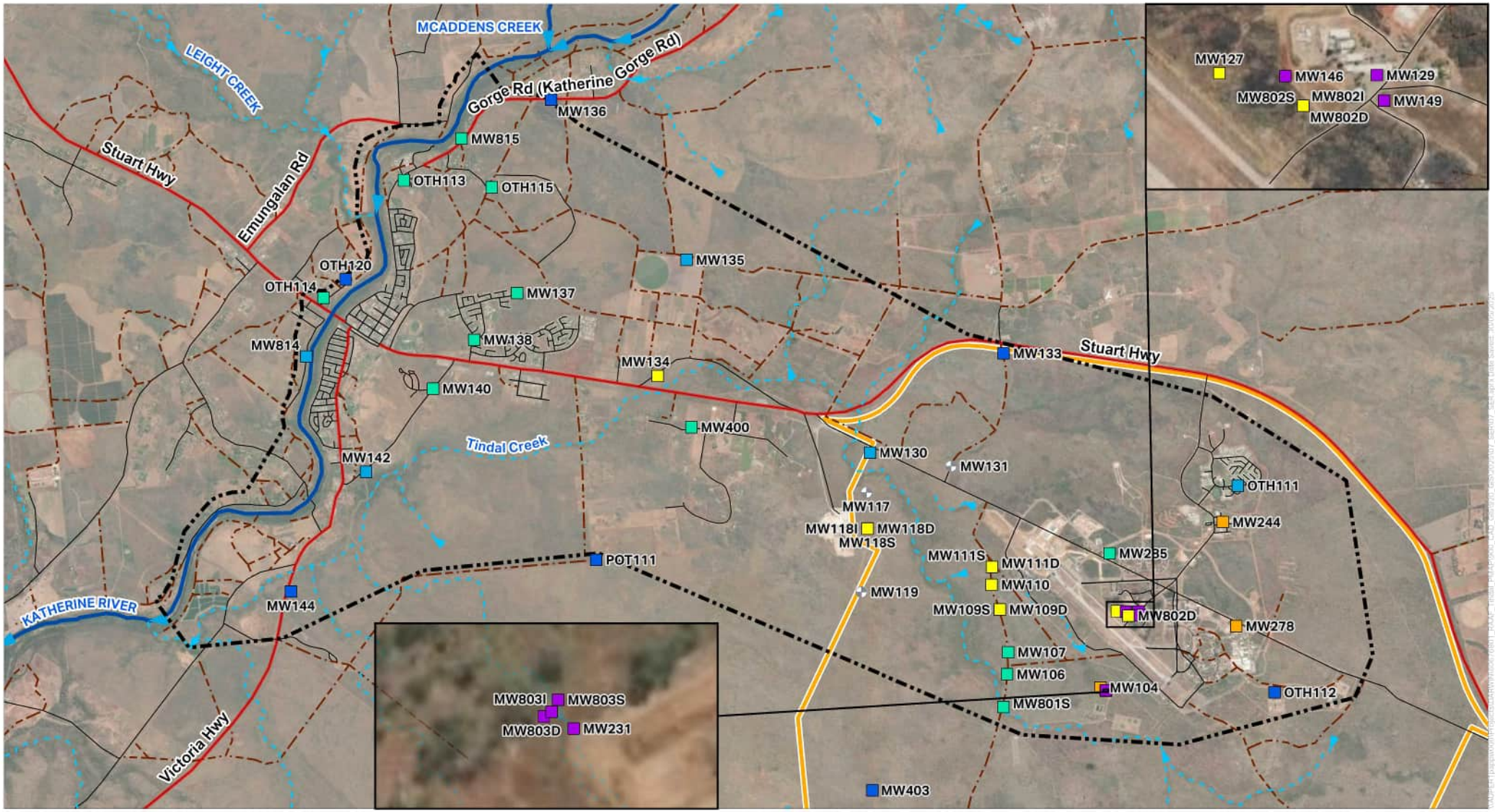

FIGURE F9: SUM OF PFOS + PFHxS CONCENTRATIONS FOR ON AND OFF-BASE GROUNDWATER LOCATIONS APRIL - MAY 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOS + PFHxS (µg/L)

- > 50
- 10 - 50
- 2 - 10
- 0.07 - 2
- 0.01 - 0.07
- < 0.01
- Not Sampled Due To Being Inaccessible, Dry or Blocked

N

0 1 2 km

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Source: World Imagery: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
World Imagery: Earthstar Geographics

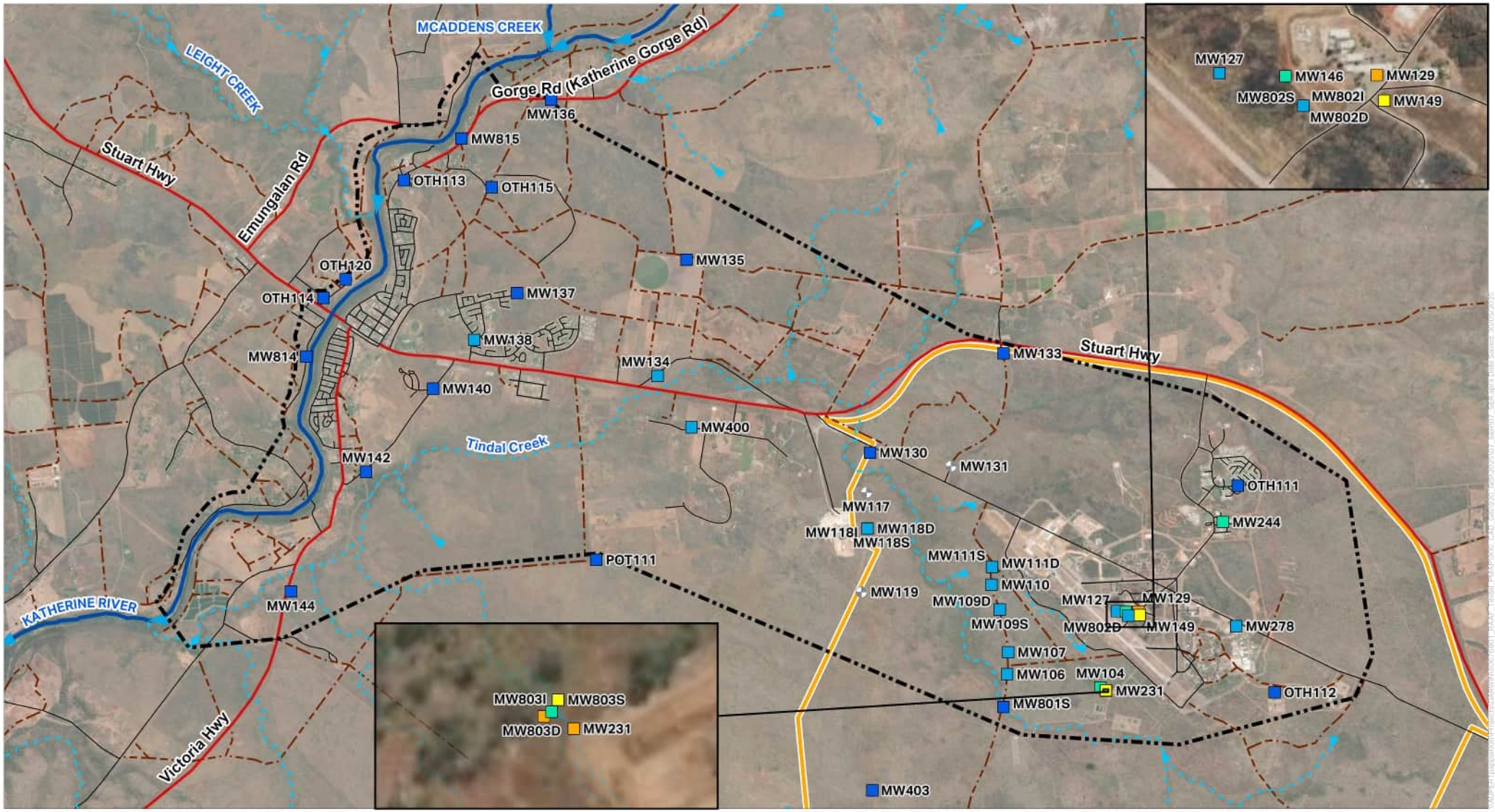

FIGURE F10: PFOA CONCENTRATIONS FOR ON AND OFF-BASE GROUNDWATER LOCATIONS APRIL - MAY 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOA (µg/L)

- > 19
- 10 -19
- 0.56 -10
- 0.01 - 0.56
- > 0.01
- Not Sampled Due To Being Inaccessible, Dry or Blocked

N

0 1 2 km

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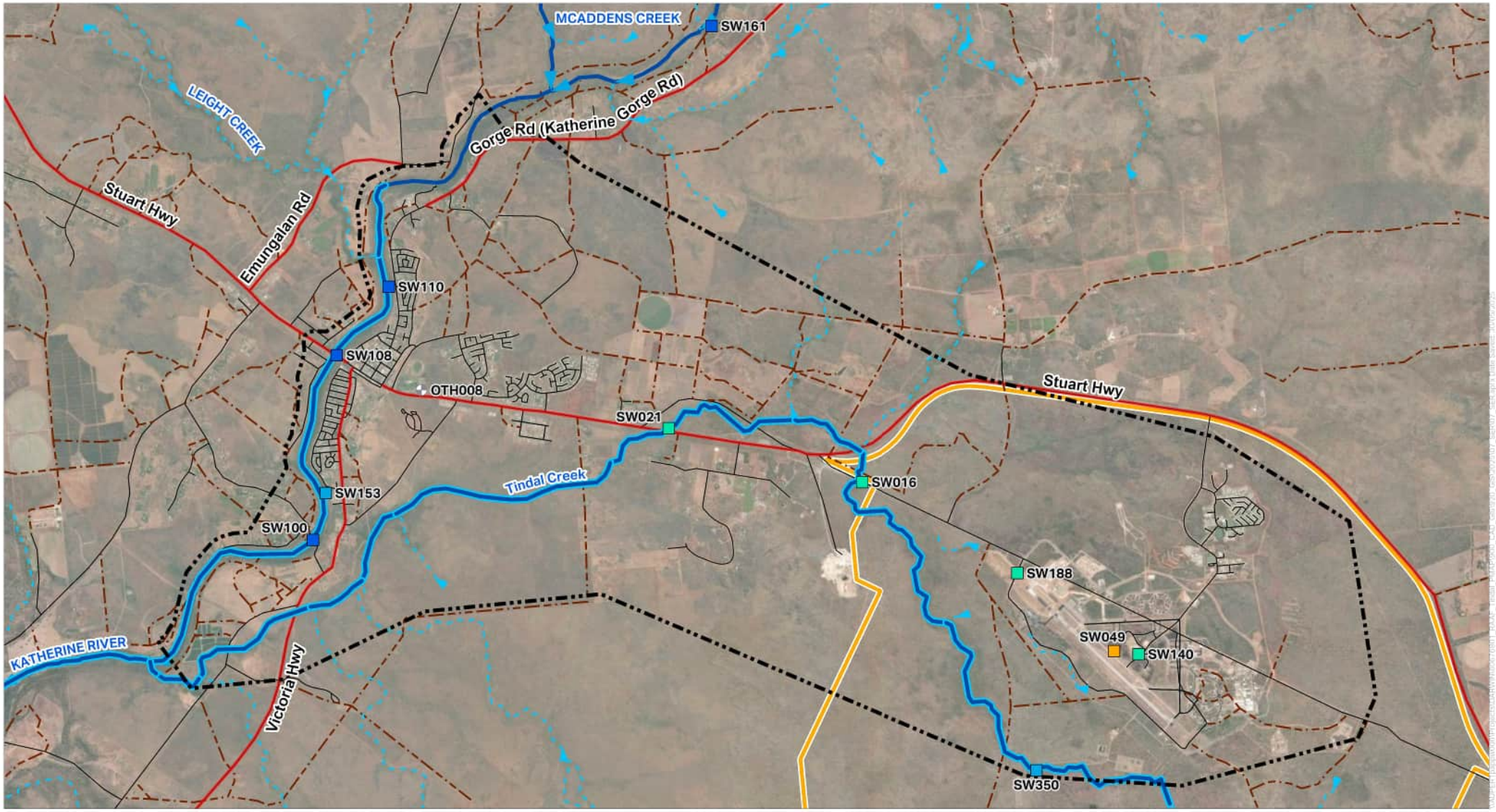

FIGURE F11: SUM OF PFOS + PFHxS CONCENTRATIONS FOR ON AND OFF-BASE SURFACE WATER LOCATIONS MARCH-APRIL 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOS + PFHxS (µg/L)

- > 50
- 10 - 50
- 2 - 10
- 0.07 - 2
- 0.01 - 0.07
- < 0.01
- Not Sampled

N

0 1 2 km

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Source: World Imagery: Earthstar Geographics

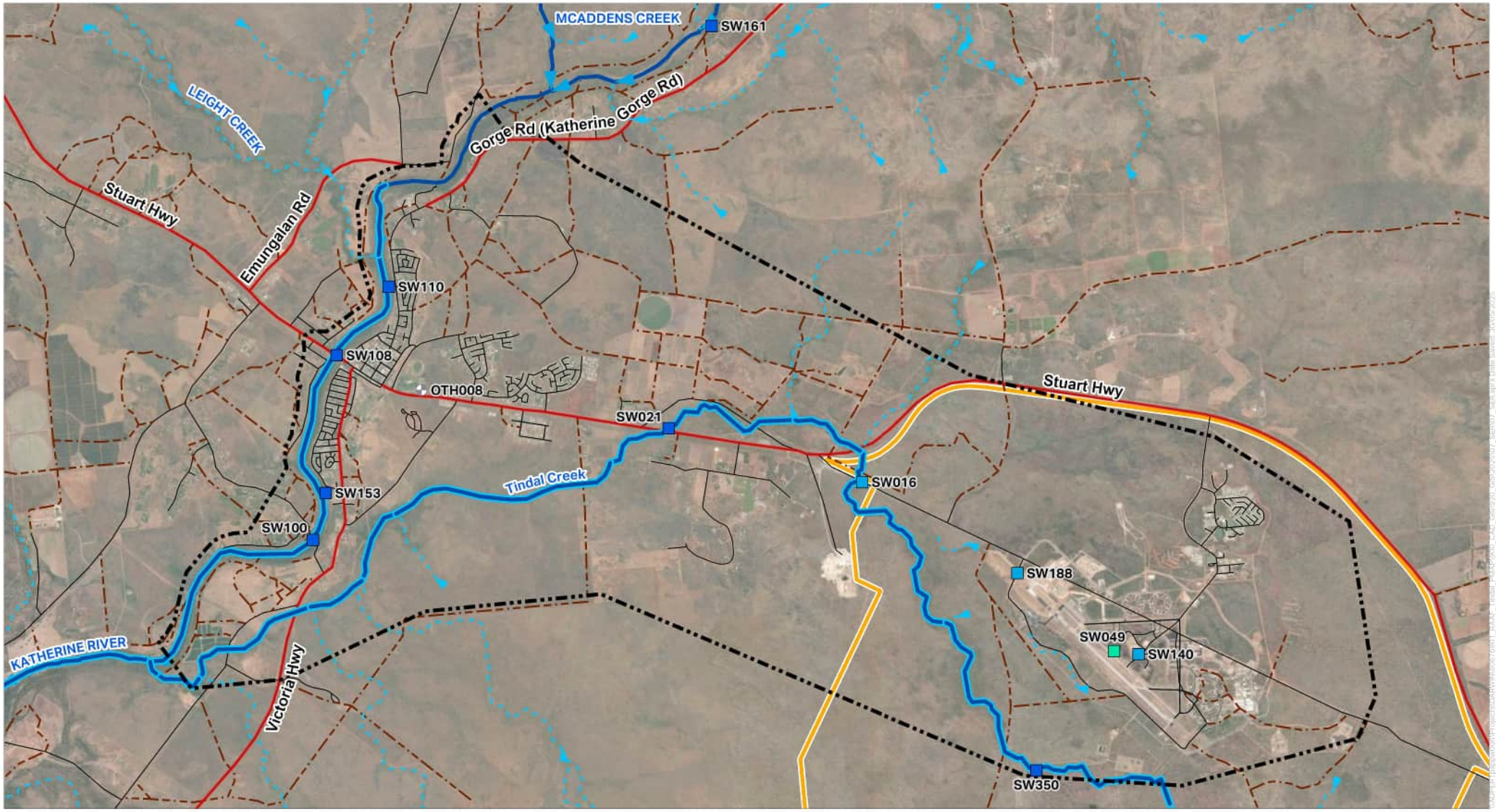

FIGURE F12: PFOA CONCENTRATIONS FOR ON AND OFF-BASE SURFACE WATER LOCATIONS MARCH-APRIL 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage

PFOA (µg/L)

- > 19
- 10 -19
- 0.56 -10
- 0.01 - 0.56
- > 0.01
- Not Sampled

N

0 1 2 km

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Source: World Imagery: Earthstar Geographics

Appendix B

Tables

Appendix B Tables

Table T1 Private Property Groundwater Field Parameters
Table T2 Private Property Groundwater Analytical Results
Table T3a Biannual Groundwater Gauging Results
Table T3b Biannual Groundwater Field Parameters
Table 4 Biannual Groundwater Analytical Results
Table 5 Surface Water Field Parameters
Table 6 Surface Water Analytical Results

Table T1 - Private Property Field Results

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Sampling Results													
Month	**Location ID**	**Date**	**DO (mg/L)**	**EC (µS/cm)**	**pH**	**Redox (mV)**	**Redox Corr (mV)**	**Temp (°C)**	**Turbidity**	**Water Colour**	**Odour**	**Sheen**	**Sample Method**
Feb-25	OTH117	17/02/2025	5.76	773	7.38	135.0	335.0	33.2	Low	Colourless	No odour	No sheen	Tap
	OTH118	18/02/2025	3.12	829	7.36	123.7	323.7	30.9	Low	Colourless	No odour	No sheen	Tap
	OTH119	17/02/2025	4.77	868	7.32	94.7	294.7	31.3	Low	Colourless	No odour	No sheen	Tap
	POT112	17/02/2025	2.32	998	7.44	91.1	291.1	33.4	Low	Colourless	No odour	No sheen	Tap
	POT113	17/02/2025	2.56	811	7.49	77.8	277.8	31.2	Low	Colourless	No odour	No sheen	Tap
	POT114	17/02/2025	3.04	726	7.57	106	306.1	29.2	Low	Colourless	No odour	No sheen	Tap
	POT120	17/02/2025	5.32	900	7.7	117	317.4	34.9	Low	Colourless	No odour	No sheen	Tap
	POT121	18/02/2025	4.07	632	7.46	108.8	308.8	26.2	Low	Colourless	No odour	No sheen	Tap
	POT124	17/02/2025	1.01	733	7.64	100.2	300.2	30.7	Low	Colourless	No odour	No sheen	Tap
	POT125	17/02/2025	5.31	713	7.39	123.1	323.1	31.1	Low	Colourless	No odour	No sheen	Tap
	POT126	17/02/2025	3.87	732	7.59	95.00	295.0	32.1	Low	Colourless	No odour	No sheen	Tap
	POT127	18/02/2025	1.28	674	7.61	118.5	318.5	26.7	Low	Colourless	No odour	No sheen	Tap
	POT128	17/02/2025	2.24	1052	7.44	76.5	276.5	31.2	Low	Colourless	No odour	No sheen	Tap
	POT129	17/02/2025	4.35	696	7.54	86.0	286.0	28	Low	Colourless	No odour	No sheen	Tap
	POT130	18/02/2025	4.85	703	7.51	104.6	304.6	30.2	Low	Colourless	No odour	No sheen	Tap
	POT131	17/02/2025	4.58	496	7.48	100.4	300.4	41.8	Low	Colourless	No odour	No sheen	Tap
	POT201	18/02/2025	3.35	796	7.43	139.7	339.7	33.2	Low	Colourless	No odour	No sheen	Tap
Mar-25	OTH117	17/03/2025	1.45	697	7.51	164.4	364.4	32.1	Low	Colourless	No odour	No sheen	Tap
	OTH118	18/03/2025	1.29	666	7.48	146.8	346.8	31.1	Low	Colourless	No odour	No sheen	Tap
	OTH119	17/03/2025	1.46	993	7.24	221.5	421.5	30.7	Low	Colourless	No odour	No sheen	Tap
	POT112	17/03/2025	2.81	883	7.08	230.4	430.4	34.2	Low	Colourless	No odour	No sheen	Tap
	POT113	17/03/2025	2.39	814	7.43	154.3	354.3	31.4	Low	Colourless	No odour	No sheen	Tap
	POT114	17/03/2025	1.32	682	7.4	169.8	369.8	32.2	Low	Colourless	No odour	No sheen	Tap
	POT120	17/03/2025	3.3	702	7.59	164.3	364.3	32.9	Low	Colourless	No odour	No sheen	Tap
	POT121	18/03/2025	3.62	627	7.44	118.0	318.0	28.6	Low	Colourless	No odour	No sheen	Tap
	POT124	17/03/2025	1.56	747	7.45	169.0	369.0	30.8	Low	Colourless	No odour	No sheen	Tap
	POT125	17/03/2025	3.49	684	7.44	151.5	351.5	33.1	Low	Colourless	No odour	No sheen	Tap
	POT126	17/03/2025	1.47	686	7.47	183.4	383.4	32.0	Low	Colourless	No odour	No sheen	Tap
	POT127	18/03/2025	0.72	645	7.45	145.9	345.9	29.7	Low	Colourless	No odour	No sheen	Tap
	POT128	17/03/2025	2.15	864	7.22	169.9	369.9	31.2	Low	Colourless	No odour	No sheen	Tap
	POT129	17/03/2025	3.18	669	7.42	154.0	354.0	30.0	Low	Colourless	No odour	No sheen	Tap
	POT130	18/03/2025	2.68	684	7.36	133.8	333.8	29.9	Low	Colourless	No odour	No sheen	Tap
	POT131	17/03/2025	3.05	509	7.5	167.0	367.0	36.8	Low	Colourless	No odour	No sheen	Tap
	POT198	18/03/2025	0.47	679	7.39	134.2	334.2	29.2	Low	Colourless	No odour	No sheen	Tap
	POT201	18/03/2025	1.3	685	7.38	122.4	322.4	30.5	Low	Colourless	No odour	No sheen	Tap
Apr-25	OTH117	15/05/2025	3.74	829	6.02	68.2	268.2	37.0	Low	Colourless	No odour	No sheen	Tap
	OTH118	14/05/2025	1.53	759	7.02	72.7	272.7	30.4	Low	Colourless	No odour	No sheen	Tap
	OTH119	15/05/2025	3.21	1126	5.98	69.0	269.0	30.6	Low	Colourless	No odour	No sheen	Tap
	POT112	15/05/2025	2.15	895	7.02	64.7	264.7	31.7	Low	Colourless	No odour	No sheen	Tap
	POT113	15/05/2025	2.84	1050	6.99	46.9	246.9	31.0	Low	Colourless	No odour	No sheen	Tap
	POT114	15/05/2025	1.43	780	7.07	58.2	258.2	33.0	Low	Colourless	No odour	No sheen	Tap
	POT120	14/05/2025	3.45	789	7.59	98.6	298.6	32.9	Low	Colourless	No odour	No sheen	Tap
	POT121	14/05/2025	4.48	646	7.46	41.0	241.0	25.4	Low	Colourless	No odour	No sheen	Tap
	POT124	15/05/2025	4.68	310	7.23	71.3	271.3	29.2	Low	Colourless	No odour	No sheen	Tap
	POT124	15/05/2025	3.65	836	7.08	62.4	262.4	30.7	Low	Colourless	No odour	No sheen	Tap
	POT125	14/05/2025	5.48	712	7.68	51.0	251.0	30.9	Low	Colourless	No odour	No sheen	Tap
	POT126	15/05/2025	2.37	446	7.16	55.6	255.6	33.1	Low	Colourless	No odour	No sheen	Tap
	POT127	14/05/2025	8.81	133.6	8.34	44.2	244.2	25.4	Low	Colourless	No odour	No sheen	Tap
	POT128	15/05/2025	3.07	929	7.06	48.9	248.9	31.1	Low	Colourless	No odour	No sheen	Tap
	POT129	14/05/2025	4.68	310	7.23	71.3	271.3	29.2	Low	Colourless	No odour	No sheen	Tap
	POT130	14/05/2025	3.63	753	7.14	19.6	219.6	30.2	Low	Colourless	No odour	No sheen	Tap
	POT131	30/04/2025	2.06	659	7.60	70.9	270.9	27.3	Low	Colourless	No odour	No sheen	Tap
	POT198	15/05/2025	2.77	883	7.09	41.7	241.7	37.8	Low	Colourless	No odour	No sheen	Tap
	POT201	14/05/2025	3.84	683	7.49	67.1	267.1	25.6	Low	Colourless	No odour	No sheen	Tap

Notes:
mg/L: miligram per Litre
µS/cm: microsiemens per centimetre
mV: milivolts
°C: degrees celcius
Corrected redox = redox +200

Client Name: Department of Defence
Project Name: RAAF Base Tindal - PFAS Ongoing Monitoring Plan

Table T2 - Private Bore Groundwater Analytical Results

AECOM

					Per- and Poly-fluoroalkyl Substances																															
					Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonate (PFOS)	Perfluorohexane sulfonate (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoronondecanoic acid (PFUnDA)	Perfluoroctadecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexadecanoic acid (PFHxDA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.002	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.002	0.002	0.005	0.002	0.002	0.002	0.005	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.005	0.005	0.005	0.005	0.002	0.002	0.002
Human Health Guidelines																																				
	PFAS NEMP 2025 Drinking water quality guideline				**0.56**	**0.07**	**0.07**	**0.07**																												
	PFAS NEMP 2025 Recreational water quality guideline				10	2	2	2																												
Ecological Guidelines																																				
	PFAS NEMP 2025 Freshwater 99%				*19*	*0.00023*																														
Monitoring Round	**Location ID**	**Date**	**Field ID**	**Lab Report**																																
Feb-25	**OTH117**	**17 Feb 2025**	**0990_OTH117_250217**	**ES2504689**	<0.002	**0.101**	0.012	**0.113**	0.143	<0.005	0.030	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	OTH118	**17 Feb 2025**	**0990_OTH118_250217**	**ES2504689**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	OTH119	**17 Feb 2025**	**0990_OTH119_250217**	**ES2504689**	0.003	*0.013*	0.004	0.017	0.020	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT112	**17 Feb 2025**	**0990_POT112_250217**	**ES2504689**	<0.01	*0.03*	0.02	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	POT128	**17 Feb 2025**	**0990_POT113_250217**	**ES2504689**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	POT114	**17 Feb 2025**	**0990_POT114_250217**	**ES2504689**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	POT120	**17 Feb 2025**	**0990_POT120_250217**	**ES2504689**	<0.01	*0.03*	0.02	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	POT121	**17 Feb 2025**	**0990_POT121_250217**	**ES2504689**	<0.01	*0.02*	0.01	0.03	0.03	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	POT124	**17 Feb 2025**	**0990_POT124_250217**	**ES2504689**	<0.002	*0.033*	0.022	0.055	0.057	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT125	**17 Feb 2025**	**0990_POT125_250217**	**ES2504689**	<0.002	*0.004*	0.003	0.007	0.007	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT126	**17 Feb 2025**	**0990_POT126_250217**	**ES2504689**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT127	**17 Feb 2025**	**0990_POT127_250217**	**ES2504689**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT113	**17 Feb 2025**	**0990_POT128_250217**	**ES2504689**	0.017	**0.251**	**0.247**	**0.498**	0.809	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	0.050	0.024	<0.002	<0.005	0.112	0.008	0.009	<0.002	<0.002	<0.002	0.051	0.02	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT129	**17 Feb 2025**	**0990_POT129_250217**	**ES2504689**	<0.002	*0.015*	0.010	0.025	0.025	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT130	**17 Feb 2025**	**0990_POT130_250217**	**ES2504689**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT131	**17 Feb 2025**	**0990_POT131_250217**	**ES2504689**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT198	**17 Feb 2025**	**0990_POT198_250217**	**ES2504689**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT201	**17 Feb 2025**	**0990_POT201_250217**	**ES2504689**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
Mar-25	**OTH117**	**17 Mar 2025**	**0990_OTH117_250317**	**ES2508368**	<0.002	*0.007*	0.006	0.013	0.013	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	OTH118	**18 Mar 2025**	**0990_OTH118_250318**	**ES2508369**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	OTH119	**17 Mar 2025**	**0990_OTH119_250317**	**ES2508369**	0.010	*0.021*	0.004	0.025	0.040	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	0.002	<0.002	<0.005	<0.002	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT112	**17 Mar 2025**	**0990_POT112_250317**	**ES2508369**	<0.01	*0.03*	0.02	0.05	0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	POT113	**17 Mar 2025**	**0990_POT113_250317**	**ES2508368**	<0.01	**0.23**	**0.15**	**0.38**	0.46	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.02	<0.02	<0.02	-	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	POT114	**17 Mar 2025**	**0990_POT114_250317**	**ES2508369**	<0.002	*0.008*	0.005	0.013	0.013	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT120	**17 Mar 2025**	**0990_POT120_250317**	**ES2508369**	<0.002	*0.022*	0.018	0.040	0.045	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.01	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT121	**18 Mar 2025**	**0990_POT121_250318**	**ES2508369**	<0.01	*0.02*	0.02	0.04	0.04	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	POT124	**17 Mar 2025**	**0990_POT124_250317**	**ES2508369**	<0.002	*0.017*	0.008	0.025	0.025	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT125	**17 Mar 2025**	**0990_POT125_250317**	**ES2508368**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT126	**17 Mar 2025**	**0990_POT126_250317**	**ES2508369**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT127	**18 Mar 2025**	**0990_POT127_250318**	**ES2508369**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	POT128	**17 Mar 2025**	**0990_POT128_250317**	**ES2508368**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT129	**17 Mar 2025**	**0990_POT129_250317**	**ES2508369**	<0.002	*0.010*	0.008	0.018	0.018	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT130	**18 Mar 2025**	**0990_POT130_250318**	**ES2508369**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT131	**17 Mar 2025**	**0990_POT131_250317**	**ES2508369**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT198	**18 Mar 2025**	**0990_POT198_250318**	**ES2508369**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT201	**18 Mar 2025**	**0990_POT201_250318**	**ES2508369**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
Apr-25	**OTH117**	**14 Apr 2025**	**0990_OTH117_250414**	**ES2510860**	<0.002	*0.010*	0.007	0.017	0.017	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	OTH118	**14 Apr 2025**	**0990_OTH118_250414**	**ES2510860**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	OTH119	**14 Apr 2025**	**0990_OTH119_250414**	**ES2510860**	0.012	*0.027*	0.004	0.031	0.045	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT112	**14 Apr 2025**	**0990_POT112_250414**	**ES2510860**	<0.01	*0.02*	0.02	0.04	0.04	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	POT113	**14 Apr 2025**	**0990_POT113_250414**	**ES2510860**	0.04	**0.97**	**0.66**	**1.63**	2.09	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.10	0.04	<0.02	-	0.17	0.03	<0.02	<0.02	<0.02	<0.02	0.08	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	POT114	**14 Apr 2025**	**0990_POT114_250414**	**ES2510860**	<0.002	*0.008*	0.004	0.012	0.012	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT120	**14 Apr 2025**	**0990_POT120_250414**	**ES2510860**	<0.01	*0.02*	0.02	0.04	0.04	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	POT121	**15 Apr 2025**	**0990_POT121_250415**	**ES2510860**	<0.01	*0.02*	0.02	0.04	0.04	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	POT124	**14 Apr 2025**	**0990_POT124_250414**	**ES2510860**	<0.002	*0.018*	0.008	0.026	0.026	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT125	**14 Apr 2025**	**0990_POT125_250414**	**ES2510860**	<0.002	<0.002	<0.002	<0.002	0.024	<0.005	0.024	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT126	**14 Apr 2025**	**0990_POT126_250414**	**ES2510860**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT127	**15 Apr 2025**	**0990_POT127_250415**	**ES2510860**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT128	**14 Apr 2025**	**0990_POT128_250414**	**ES2510860**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT129	**14 Apr 2025**	**0990_POT129_250414**	**ES2510860**	<0.002	*0.010*	0.007	0.017	0.017	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT130	**15 Apr 2025**	**0990_POT130_250415**	**ES2510860**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT131	**30 Apr 2025**	**0990_POT131_250430**	**ES2513390**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT198	**14 Apr 2025**	**0990_POT198_250414**	**ES2510860**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	POT201	**15 Apr 2025**	**0990_POT201_250415**	**ES2510860**	<0.002	<0.002	<0.002	<0.002	0.035	<0.005	0.035	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002

Comments

#1 Reported Analyte LOR is higher than Requested Analyte LOR

Note:

µg/L: micrograms per litre

LOR: limit of reporting

Client Name: Department of Defence
Project Name: RAAF Base Tindal - PFAS Ongoing Monitoring Plan

Table 3a - Biannual Groundwater Gauging Results

Location	Gauging Date	TOC (mAHD)	DTW (mbTOC)	Total Depth (mbTOC)	Groundwater Elevation (mAHD)	Screen interval depth	HS install depth (m)	Comments
MW104	1/05/2025	133.66	4.475	20.56	129.185	2.5-20	6.5	Good condition, no odour, no sheen
MW106	1/05/2025	130.16	4.447	16.35	125.713	2.4-18	6.5	Good condition, no odour, no sheen
MW107	1/05/2025	131.31	5.384	13.54	125.926	1.0-15	7.3	Good condition, no odour, no sheen
MW109	1/05/2025	129.28	3.961	7.13	125.319	1.5-13.5	6	Good condition, no odour, no sheen
MW109D	1/05/2025	129.31	3.927	20.46	125.383	15.5-20.5	15.5	Good condition, no odour, no sheen
MW110	1/05/2025	127.67	3.102	12.05	124.568	1.2-13.2	5.1	Good condition, no odour, no sheen
MW111	1/05/2025	128.48	4.375	8.34	124.105	2-15	6	Good condition, no odour, no sheen
MW111D	1/05/2025	128.6	4.361	50	124.239	44-50	47	Good condition, no odour, no sheen
MW117	1/05/2025	120.53	Blocked with roots					Good condition, no odour, no sheen
MW118	1/05/2025	126.18	Blocked with roots					Good condition, no odour, no sheen
MW118D	1/05/2025	126.55	15.402	50	111.148	44-50	47	Good condition, no odour, no sheen
MW118I	1/05/2025	126.51	15.342	34.2	111.168	29-35	32	Good condition, no odour, no sheen
MW119	1/05/2025	126.51	Blocked with roots					Good condition, no odour, no sheen
MW127	30/04/2025	131	1.377	24.7	129.623	1.5-20	4.5	Good condition, no odour, no sheen
MW129	30/04/2025	132.88	3.064	19.51	129.816	2.0-20	5	Good condition, no odour, no sheen
MW130	1/05/2025	117.58	7.396	19.24	110.184	1-19	9.4	Good condition, no odour, no sheen
MW131	1/05/2025	122.68	Well bulldozed over during dirt road regrading					
MW133	1/05/2025	133.15	2.863	9.2	130.287	1.7-19.7	4.8	Good condition, no odour, no sheen
MW134	1/05/2025	110.019	9.991	21.45	100.028	2.5-20	12	Rootlets present, no odour, no sheen
MW135	1/05/2025	117.3	17.154	19.76	100.146	2.5-19	19	Good condition, no odour, no sheen
MW136	1/05/2025	107.52	10.224	25.52	97.296	16.9-24.4	19.9	Good condition, no odour, no sheen
MW137	1/05/2025	109.87	12.219	20.1	97.651	2.0-20	14.2	Good condition, no odour, no sheen, data logger present
MW138	1/05/2025	106.74	9.422	19.6	97.318	5.5-19.5	11.4	Good condition, no odour, no sheen
MW140	1/05/2025	102.845	9.997	15.13	92.848	2.7-18.7	12	Ant nest in gatic, no odour, no sheen
MW142	1/05/2025	102.234	7.665	18.8	94.569	3.0-18	9.6	Good condition, no odour, no sheen
MW144	1/05/2025	101.234	7.901	20.1	93.333	3.0-20	10	Good condition, no odour, no sheen
MW146	30/04/2025	131.666	1.946	17.49	129.72	12-18	15	Good condition, no odour, no sheen
MW149	30/04/2025	133.5	3.749	17.17	129.751	10-16	13	Bent gatic lid
MW231	1/05/2025	135.22	3.464	23.29	131.756	3.0-24	5.5	Good condition, no odour, no sheen
MW244	30/04/2025	142.96	9.961	21	132.999	1-21	12	Good condition, hydrocarbon odour, no sheen, thin LNAPL
MW278	30/04/2025	139.46	7.074	22.95	132.386	3.0-24	5	Good condition, no odour, no sheen
MW285	30/04/2025	131.3	2.248	20.87	129.052	3.0-18	5.5	Missing bolts, no odour, no sheen
MW400	1/05/2025	111.08	8.682	50	102.398	30.6-36	33.5	Good condition, no odour, no sheen, data logger present
MW403	1/05/2025	133.9	8.452	10.52	125.448	6.5-10.5	9.5	Good condition, no odour, no sheen
MW801S	6/05/2025	129.42	3.022	11.54	126.398	4.5-10.5	6.5	Good condition, no odour, no sheen, data logger present
MW802D	30/04/2025	132.707	2.99	19.34	129.717	15-18	17	Good condition, no odour, no sheen, data logger present
MW802I	30/04/2025	132.95	3.088	14.97	129.862	11-14	13	Good condition, no odour, no sheen, data logger present
MW802S	30/04/2025	132.88	3.164	10.48	129.716	7.5-9.2	8.8	Good condition, no odour, no sheen, data logger present
MW803D	1/05/2025	133.818	5.517	25.32	128.301	18-24	21	Good condition, no odour, no sheen
MW803I	1/05/2025	133.84	5.451	15.06	128.389	12-15	14	Good condition, no odour, no sheen
MW803S	1/05/2025	133.869	3.679	10.99	130.19	7-10	9	Good condition, no odour, no sheen
MW814	1/05/2025	105.714	16.655	30.98	89.059	28-31	30	Good condition, no odour, no sheen
MW815	1/05/2025	106.624	13.575	31.75	93.049	28-31	30	Good condition, no odour, no sheen
OTH111	30/04/2025	144.955	11.424	50	133.531	45-60	48	Good condition, no odour, no sheen, tubing in 100m well

Note:
mAHD - metres above Australian Height Datum
TOC - top of casing
DTW - depth to water
mbTOC - metres below top of casing

Client Name: Department of Defence
Project Name: RAAF Base Tindal - PFAS Ongoing Monitoring Plan

Table 3b - Biannual Groundwater Field Parameters

Location	Date Sampled	Dissolved Oxygen	Dissolved Oxygen	Redox Potential	Redox Corrected	Total Dissolved Solids*	Temperature	Electrical conductivity	pH	Comments
		(mg/L)	(%)	(mV)	(mV)	(mg/L)	(°C)	(µS/cm)	(pH Units)	
MW104	6/05/2025	1.33	16.10	63.6	263.6	491.52	30.7	768	6.82	Colourless, low turbidity, no odour, no sheen
MW106	6/05/2025	0.46	5.57	-12.1	187.9	622.08	31.2	972	6.87	Colourless, low turbidity, no odour, no sheen
MW107	6/05/2025	0.57	6.90	-13.6	186.4	496.64	30.7	776	6.86	Light brown, high turbidity, no odour, no sheen, suspended solids
MW109	6/05/2025	0.46	5.57	-167.2	32.8	516.48	30.6	807	6.92	Colourless, low turbidity, no odour, no sheen
MW109D	6/05/2025	2.01	24.33	-111.2	88.8	451.20	30.6	705	6.9	Pale brown, low turbidity, no odour, no sheen
MW110	6/05/2025	0.64	7.75	56.4	256.4	497.28	30.8	777	6.82	Light brown, moderate turbidity, no odour, no sheen, suspended solids
MW111	6/05/2025	4.01	48.53	160.2	360.2	530.56	31.6	829	6.91	Colourless, low turbidity, no odour, no sheen
MW111D	6/05/2025	1.16	14.04	140.2	340.2	501.12	31.9	783	6.89	Colourless, low turbidity, no odour, no sheen
MW117	6/05/2025	-	-	-	-	-	-	-	-	Blocked with roots
MW118	6/05/2025	-	-	-	-	-	-	-	-	Blocked with roots
MW118D	6/05/2025	0.66	7.99	2.7	202.7	494.08	30.9	772	6.76	Colourless, low turbidity, mild sulfuric odour, no sheen
MW118I	6/05/2025	1.15	13.92	22.8	222.8	522.88	30.9	817	6.76	Colourless, low turbidity, no odour, no sheen
MW119	6/05/2025	-	-	-	-	-	-	-	-	Blocked with roots
MW127	7/05/2025	1.05	12.71	117.2	317.2	480.00	30.2	750	6.99	Colourless, low turbidity, no odour, no sheen
MW129	7/05/2025	1.46	17.67	100.3	300.3	301.44	33.9	471	6.63	Colourless to light brown, moderate turbidity, no odour, no sheen, suspended solids throughout
MW130	6/05/2025	3.72	45.02	94.5	294.5	510.08	29.7	797	6.87	Colourless, low turbidity, no odour, no sheen, low water in sleeve
MW131	6/05/2025	-	-	-	-	-	-	-	-	Well bulldozed over during dirt road regrading
MW133	6/05/2025	0.95	11.50	-77.2	122.8	320.00	29.3	500	7.14	Colourless, low turbidity, brown floculent rootlets
MW134	8/05/2025	1.35	16.34	88.8	288.8	539.52	29.0	843	6.64	Brown, moderate turbidity, no odour, no sheen, heavily root impacted
MW135	8/05/2025	1.9	23.00	102	302.0	533.12	30.1	833	6.89	Colourless, low turbidity, no odour, no sheen
MW136	6/05/2025	3.21	38.85	17.8	217.8	508.80	30.6	795	6.89	Pale brown, moderate turbidity, no odour, no sheen
MW137	6/05/2025	1.84	22.27	94.2	294.2	501.12	29.3	783	6.94	Pale brown, low turbidity, no odour, no sheen
MW138	6/05/2025	1.34	16.22	-78.3	121.7	572.80	29.6	895	6.91	Pale brown, low turbidity, no odour, no sheen
MW140	7/05/2025	3.29	39.82	106.2	306.2	298.24	30.9	466	7.24	Pale brown, low turbidity, no odour, no sheen
MW142	6/05/2025	1.13	13.68	85.3	285.3	485.12	29.7	758	6.83	Colourless, low turbidity, no odour, no sheen, sand in sleeve
MW144	6/05/2025	2.36	28.56	150.4	350.4	650.88	30.8	1017	6.91	Colourless, low turbidity, no odour, no sheen
MW146	7/05/2025	0.32	3.87	17.3	217.3	480.00	31.3	750	6.95	Colourless, low turbidity, no odour, no sheen
MW149	7/05/2025	1.02	12.35	59	259.0	368.00	31.6	575	7.04	Colourless, low turbidity, no odour, no sheen
MW231	6/05/2025	0.91	11.01	1.7	201.7	137.36	31.7	214.63	6.08	Cloudy white, moderate turbidity, no odour, no sheen
MW244	7/05/2025	0.57	6.90	-63.5	136.5	336.00	33.0	525	6.69	Colourless, low turbidity, hydrocarbon odour, no sheen, sediment at bottom of sleeve
MW278	7/05/2025	1.98	23.96	127.2	327.2	146.11	32.2	228.3	6.48	Colourless, low turbidity, no odour, no sheen
MW285	7/05/2025	0.68	8.23	127.2	327.2	442.88	32.2	692	8.9	Colourless, low turbidity, no odour, no sheen
MW400	6/05/2025	1.1	13.31	-25	175.0	497.28	30.2	777	6.84	Colourless, low turbidity, sulfuric odour, no sheen
MW403	6/05/2025	0.44	5.33	-115.2	84.8	512.00	30.6	800	6.97	Colourless, low turbidity, no odour, no sheen
MW801S	8/05/2025	1.71	20.70	93.1	293.1	529.28	27.3	827	6.84	Pale brown, low turbidity, no odour, no sheen
MW802D	7/05/2025	0.96	11.62	-10.1	189.9	471.68	32.1	737	6.86	Colourless, low turbidity, mild sulfuric odour, no sheen
MW802I	7/05/2025	0.56	6.78	61.1	261.1	488.32	32.0	763	6.89	Colourless, low turbidity, no odour, no sheen
MW802S	7/05/2025	0.75	9.08	-99.8	100.2	542.08	32.5	847	7.26	Colourless, low turbidity, sulfuric odour, no sheen, black sediment
MW803D	6/05/2025	0.53	6.41	-93.7	106.3	323.20	32.1	505	6.95	Colourless, low turbidity, no odour, no sheen
MW803I	6/05/2025	0.58	7.02	-140.3	59.7	861.44	31.7	1346	6.64	Colourless, low turbidity, sulfuric odour, no sheen, black suspended solids
MW803S	6/05/2025	0.56	6.78	-49.8	150.2	220.10	31.4	343.9	6.53	Colourless, low turbidity, no odour, no sheen
MW814	6/05/2025	1.34	16.22	99.6	299.6	488.96	31.0	764	6.98	Colourless, low turbidity, no odour, no sheen
MW815	6/05/2025	3.21	38.85	17.8	217.8	508.80	30.6	795	6.89	Pale brown, moderate turbidity, no odour, no sheen
OTH111	7/05/2025	1.96	23.27	135.2	335.2	373.76	30.3	584	6.95	Colourless, low turbidity, no odour, no sheen, some organic debris throughout
OTH112	7/05/2025	1.02	12.35	144.2	344.2	577.28	28.1	902	6.84	Collected from tap, colourless, low turbidity, no odour, no sheen
OTH113	2/05/2025	4.39	53.13	197.5	397.5	392.32	30.5	613	7.06	Collected from tap, colourless, no odour, no sheen
OTH114	2/05/2025	2.18	26.38	193.7	393.7	389.12	28.6	608	6.86	Collected from tap, colourless, no odour, no sheen
OTH115	6/05/2025	3.22	38.97	12.2	212.2	497.92	29.7	778	6.68	Colourless, low turbidity, no odour, no sheen
OTH120	2/05/2025	4.06	49.14	173.7	373.7	593.92	28.5	928	7.42	Collected from sprinkler fed by bore, colourless, no odour, no sheen
POT111	7/05/2025	7.72	93.44	90.8	290.8	458.24	29.6	716	7.16	Colourless, low turbidity, no odour, no sheen

Note:
°C = degrees celsisus
µS/cm = microsiemens per centremetre
mV = millivolts
Redox Corrected = Redox + 200
* calculated value where TDS = EC*0.64

Appendix B - Table T4
Biannual Groundwater Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T4 - Biannual Groundwater Analytical Results

					Per- and Poly-fluoroalkyl Substances																													
					Sum of PFAS	Sum of PFOS+PFHxS	Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonate (PFOS)	Perfluorohexane sulfonate (PFHxS)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.002	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.002	0.002	0.005	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.005	0.005	0.005	0.005	0.002	0.002	0.002
Human Health Guidelines																																		
	PFAS NEMP 2025 Drinking water quality guideline					**0.07**	**0.56**	**0.07**																										
	PFAS NEMP 2025 Recreational water quality guideline					*2*	*10*	*2*																										
Ecological Guidelines																																		
	PFAS NEMP 2025 Freshwater 99%						19	0.00023																										
Monitoring Round	**Location Code**	**Date**	**Field ID**	**Lab Report Number**																														
	MW104	**06 May 2025**	**0990_MW104_250506**	**ES2513390**	55.7	40.7	**1.61**	***31.6***	***9.06***	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	1.88	1.12	0.03	5.14	1.22	0.51	<0.02	<0.02	<0.02	1.79	0.9	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW106	**06 May 2025**	**0990_MW106_250506**	**ES2513390**	1.50	1.03	0.04	**0.62**	**0.41**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.08	0.03	<0.02	0.14	0.04	<0.02	<0.02	<0.02	<0.02	0.10	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW107	**06 May 2025**	**0990_MW107_250506**	**ES2513390**	0.66	**0.61**	0.01	**0.44**	**0.17**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	**0.02**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW109S	**06 May 2025**	**0990_MW109S_250506**	**ES2513390**	2.58	***2.07***	0.06	**1.45**	**0.62**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	**0.10**	**0.03**	<0.02	0.15	**0.06**	<0.02	<0.02	<0.02	<0.02	0.08	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW109D	**06 May 2025**	**0990_MW109D_250506**	**ES2513390**	2.55	***2.06***	0.06	**1.43**	**0.63**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	**0.10**	**0.03**	<0.02	0.14	0.05	<0.02	<0.02	<0.02	<0.02	0.08	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW110	**06 May 2025**	**0990_MW110_250506**	**ES2513390**	5.95	***4.79***	0.12	***3.38***	**1.41**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	**0.21**	**0.07**	<0.02	0.34	0.13	**0.04**	<0.02	<0.02	<0.02	0.18	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW111S	**06 May 2025**	**0990_MW111S_250506**	**ES2513390**	3.29	***2.64***	0.06	**1.73**	**0.91**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	**0.12**	**0.05**	<0.02	**0.20**	**0.06**	**0.02**	<0.02	<0.02	<0.02	0.10	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW111D	**06 May 2025**	**0990_MW111D_250506**	**ES2513390**	4.48	***3.65***	0.09	***2.65***	**1.00**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	**0.14**	**0.05**	<0.02	0.23	0.11	**0.03**	<0.02	<0.02	<0.02	0.13	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW118D	**08 May 2025**	**0990_MW118D_250508**	**ES2513390**	2.74	***2.00***	0.05	**1.33**	**0.67**	<0.05	0.11	<0.05	<0.05	<0.02	<0.02	<0.05	**0.08**	**0.10**	<0.02	0.12	0.05	<0.02	<0.02	<0.02	<0.02	0.08	0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW118I	**06 May 2025**	**0990_MW118I_250506**	**ES2513390**	2.63	***2.03***	0.05	**1.37**	**0.66**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	**0.10**	**0.08**	<0.02	0.16	0.06	**0.02**	<0.02	<0.02	<0.02	0.09	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW127	**07 May 2025**	**0990_MW127_250507**	**ES2513390**	6.15	***4.92***	0.11	***3.52***	**1.40**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	**0.19**	**0.12**	<0.02	0.42	0.11	**0.04**	<0.02	<0.02	<0.02	0.17	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW129	**07 May 2025**	**0990_MW129_250507**	**ES2513390**	1,110	***497***	***76.7***	***342***	***155***	<0.05	5.35	0.26	<0.05	<0.04#1	<0.04#1	<0.11#1	**39.6**	**91.3**	**0.21**	233	12.4	**53.0**	<0.04#1	<0.04#1	<0.04#1	49.3	42.3	<0.11#1	<0.11#1	<0.11#1	<0.11#1	<0.04#1	**0.06**	<0.04#1
	MW130	**06 May 2025**	**0990_MW130_250506**	**ES2513390**	0.03	0.03	<0.01	0.01	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW133	**06 May 2025**	**0990_MW133_250506**	**ES2513390**	0.006	0.006	<0.002	<0.002	0.006	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	MW134	**08 May 2025**	**0990_MW134_250508**	**ES2513390**	2.56	***2.06***	0.04	**1.34**	**0.72**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	**0.12**	**0.02**	<0.02	0.12	**0.06**	<0.02	<0.02	<0.02	<0.02	0.10	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW135	**08 May 2025**	**0990_MW135_250508**	**ES2513390**	0.05	***0.05***	<0.01	0.04	0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW136	**06 May 2025**	**0990_MW136_250506**	**ES2513390**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	MW137	**06 May 2025**	**0990_MW137_250506**	**ES2513390**	0.50	**0.44**	<0.01	**0.25**	**0.19**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	**0.03**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW138	**06 May 2025**	**0990_MW138_250506**	**ES2513390**	1.60	**1.45**	0.01	**1.10**	**0.35**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	**0.04**	<0.02	<0.02	**0.02**	**0.03**	<0.02	<0.02	<0.02	<0.02	0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW140	**07 May 2025**	**0990_MW140_250507**	**ES2513390**	0.22	**0.22**	<0.01	**0.14**	**0.08**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW142	**06 May 2025**	**0990_MW142_250506**	**ES2513390**	0.04	0.04	<0.01	**0.02**	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW144	**06 May 2025**	**0990_MW144_250506**	**ES2513390**	0.012	<0.002	<0.002	<0.002	<0.002	<0.005	**0.012**	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	MW146	**07 May 2025**	**0990_MW146_250507**	**ES2513390**	71.5	***52.9***	**1.55**	***38.7***	***14.2***	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	**2.57**	**1.19**	**0.02**	5.94	2.20	**0.54**	**0.03**	<0.02	<0.02	2.11	0.9	<0.05	<0.05	<0.05	<0.05	<0.02	**0.12**	<0.02
Biannual GME	**MW149**	**07 May 2025**	**0990_MW149_250507**	**ES2513390**	722	***536***	***12.6***	***336***	***200***	<0.05	<0.05	<0.05	<0.05	<0.04#1	<0.04#1	<0.11#1	**33.7**	**10.7**	**0.25**	47.2	23.6	**5.04**	<0.04#1	<0.04#1	<0.04#1	27.5	8.3	<0.11#1	<0.11#1	<0.11#1	<0.11#1	<0.04#1	**0.41**	<0.04#1
	MW231	**06 May 2025**	**0990_MW231_250506**	**ES2513390**	1,270	***726***	***72.9***	***470***	***256***	<0.43#1	5.89	0.89	<0.43#1	<0.43#1	<0.43#1	<1.07#1	**50.2**	**39.4**	**2.52**	197	43.0	**33.8**	<0.43#1	<0.43#1	<0.43#1	56.5	20.2	<1.07#1	<1.07#1	<1.07#1	<1.07#1	<0.43#1	<0.43#1	<0.43#1
	MW244	**07 May 2025**	**0990_MW244_250507**	**ES2513390**	21.0	***13.3***	**0.81**	***8.68***	***4.61***	<0.05	2.35	<0.05	<0.05	<0.02	<0.02	<0.05	**0.87**	**0.58**	**0.06**	1.13	0.37	**0.70**	<0.02	<0.02	<0.02	0.46	0.3	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW278	**08 May 2025**	**0990_MW278_250508**	**ES2513390**	12.8	***10.7***	0.12	***7.53***	***3.15***	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	**0.34**	**0.06**	<0.02	0.36	0.23	**0.04**	<0.02	<0.02	<0.02	0.61	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW285	**07 May 2025**	**0990_MW285_240507**	**ES2513390**	0.65	**0.57**	<0.01	***0.25***	***0.32***	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.05	**0.04**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW400	**06 May 2025**	**0990_MW400_250506**	**ES2513390**	1.54	**1.23**	0.03	**0.75**	**0.48**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	**0.08**	<0.02	<0.02	0.08	0.04	<0.02	<0.02	<0.02	<0.02	0.06	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW403	**08 May 2025**	**0990_MW403_250508**	**ES2513390**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW801S	**08 May 2025**	**0990_MW801S_250508**	**ES2513390**	0.50	**0.44**	<0.01	**0.30**	**0.14**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	**0.02**	<0.02	<0.02	**0.02**	<0.02	<0.02	<0.02	<0.02	<0.02	**0.02**	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW802D	**07 May 2025**	**0990_MW802D_250507**	**ES2513390**	4.69	***3.64***	0.14	***2.78***	**0.86**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	**0.13**	**0.10**	<0.02	0.38	0.09	**0.05**	<0.02	<0.02	<0.02	0.12	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW802I	**07 May 2025**	**0990_MW802I_250507**	**ES2513390**	108	***81.1***	**3.11**	***61.3***	***19.8***	<0.05	<0.05	0.09	<0.05	<0.04#1	<0.04#1	<0.11#1	**3.63**	**1.67**	<0.04#1	8.83	2.30	**1.10**	<0.04#1	<0.04#1	<0.04#1	3.06	1.5	<0.11#1	<0.11#1	<0.11#1	<0.11#1	<0.04#1	**0.20**	<0.04#1
	MW802S	**07 May 2025**	**0990_MW802S_250507**	**ES2513390**	15.3	***7.93***	0.25	**1.61**	***6.32***	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	**1.67**	**0.42**	<0.02	1.85	0.19	**0.16**	<0.02	<0.02	<0.02	1.80	0.4	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW803D	**06 May 2025**	**0990_MW803D_250506**	**ES2513390**	1,770	***1,430***	***34.8***	***1,230***	***200***	<0.42#1	1.37	2.91	<0.42#1	<0.42#1	<0.42#1	<1.05#1	**32.7**	**26.9**	**2.78**	103	33.3	**14.4**	<0.42#1	<0.42#1	<0.42#1	40.6	22.2	<1.05#1	<1.05#1	<1.05#1	<1.05#1	<0.42#1	<0.42#1	<0.42#1
	MW803I	**06 May 2025**	**0990_MW803I_250506**	**ES2513390**	250	***130***	**9.16**	***63.5***	***66.7***	<0.05	0.56	<0.05	<0.05	<0.04#1	<0.04#1	<0.11#1	**15.4**	**8.08**	**0.12**	41.0	7.58	**5.22**	<0.04#1	<0.04#1	<0.04#1	17.7	6.5	<0.11#1	<0.11#1	<0.11#1	<0.11#1	<0.04#1	<0.04#1	<0.04#1
	MW803S	**06 May 2025**	**0990_MW803S_250506**	**ES2513390**	287	***178***	***15.0***	***113***	***64.6***	<0.05	0.28	<0.05	<0.05	<0.04#1	<0.04#1	<0.10#1	**11.4**	**8.03**	**0.52**	34.3	9.91	**4.77**	<0.04#1	<0.04#1	<0.04#1	13.5	6.1	<0.10#1	<0.10#1	<0.10#1	<0.10#1	<0.04#1	<0.04#1	<0.04#1
	MW814	**06 May 2025**	**0990_MW814_250506**	**ES2513390**	0.06	**0.06**	<0.01	0.04	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	MW815	**06 May 2025**	**0990_MW815_250506**	**ES2513390**	0.241	**0.187**	0.003	**0.102**	**0.085**	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	**0.015**	**0.003**	<0.002	**0.012**	**0.004**	**0.002**	<0.002	<0.002	<0.002	**0.015**	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	MW815	**06 Jun 2025**	**0990_MW815_250606**	**ES2517036**	0.23	**0.23**	<0.01	**0.14**	**0.09**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	OTH111	**07 May 2025**	**0990_OTH111_250507**	**ES2513390**	0.054	**0.054**	<0.002	0.049	**0.005**	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002
	OTH112	**07 May 2025**	**0990_OTH112_250507**	**ES2513390**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	OTH113	**02 May 2025**	**0990_OTH113_250502**	**ES2513390**	0.18	**0.18**	<0.01	**0.10**	**0.08**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	OTH114	**02 May 2025**	**0990_OTH114_250502**	**ES2513390**	0.22	**0.22**	<0.01	**0.14**	**0.08**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	OTH115	**06 May 2025**	**0990_OTH115_250506**	**ES2513390**	0.18	**0.18**	<0.01	**0.11**	**0.07**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	OTH120	**02 May 2025**	**0990_OTH120_250502**	**ES2513390**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	POT111	**07 May 2025**	**0990_POT111_250507**	**ES2513390**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002

Comments
#1 Reported Analyte LOR is higher than Requested Analyte LOR
Note:
µg/L: micrograms per litre
LOR: limit of reporting
* LOR is above guideline value

Table T5 - Surface Water Field Parameters

AECOM

Sampling Results															
Frequency	**Location ID**	**Date**	**DO (mg/L)**	**EC (µS/cm)**	**pH**	**Redox (mV)**	**Redox (corr) (mV)**	**Temp (°C)**	**Turbidity**	**Water Colour**	**Odour**	**Sheen**	**Flow**	**Other**	**Sample Method**
Twice in Wet	SW016	1/04/2025	1.5	728	8.39	52.6	252.6	29.3	Moderate	Colourless	No odour	No sheen	Moderate	-	Grab
	SW021	1/04/2025	1.49	852	8.51	51.1	251.1	29.8	Moderate	Brown	No odour	No sheen	Moderate	-	Grab
	SW049	1/04/2025	1.23	393.8	8.34	66.2	266.2	27.6	Low	Colourless	No odour	No sheen	Minor	Foam on surface	Grab
	SW140	1/04/2025	1.51	414.2	8.32	58	258	31.1	Low	Colourless	No odour	No sheen	Minor	-	Grab
	SW188	1/04/2025	1.55	737	8.22	58.3	258.3	28.8	Low	Colourless	No odour	No sheen	High	-	Grab
	SW350	1/04/2025	1.31	656	8.3	52.7	252.7	28.8	Moderate	Colourless	No odour	No sheen	High	-	Grab
Biannual	SW100	19/03/2025	3.74	62.3	7.16	119.1	319.1	31.1	High	Brown	No odour	No sheen	High	Suspended solids	Grab
	SW108	19/03/2025	3.98	51	7.15	116.5	316.5	31.2	Moderate	Light Brown	No odour	No sheen	High	-	Grab
	SW110	19/03/2025	3.84	58.6	7.24	100.4	300.4	32.1	Moderate	Light Brown	No odour	No sheen	High	-	Grab
	SW153	19/03/2025	2.29	699	7.2	116.7	316.7	31.3	Low	Colourless	No odour	No sheen	Moderate	-	Grab
	SW161	19/03/2025	4.34	40.7	7.24	106.1	306.1	31.5	Moderate	Light Brown	No odour	No sheen	Moderate	-	Grab

Notes:
mg/L: milligram per Litre
µS/cm: microsiemens per centimetre
mV: millivolts
^{o}C: degrees celcius
Corrected redox = redox + 200

Client: Deparment of Defence
Project Name: RAAF Base Tindal - Ongoing Monitoring Plan

Table T6 - Surface Water Analytical Results

					Per- and Poly-fluoroalkyl Substances															Per- and Poly-fluoroalkyl Substances														
					Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonate (PFOS)	Perfluorohexane sulfonate (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.02	0.05	0.02	0.05	0.01	0.01	0.01
Human Health Guidelines																																		
	PFAS NEMP 2025 Drinking water quality guideline				**0.56**	**0.07**	**0.07**	**0.07**																										
	PFAS NEMP 2025 Recreational water quality guideline				10	2	2	2																										
Ecological Guidelines																																		
	PFAS NEMP 2025 Freshwater 99%				*19*	*0.00023*																												
Sample Frequency	**Location ID**	**Date**	**Field ID**	**Lab Report**																														
Biannual	**SW100**	**19 Mar 2025**	**0990_SW100_250319**	**ES2508367**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	SW110	**19 Mar 2025**	**0990_SW110_250319**	**ES2508367**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	SW161	**19 Mar 2025**	**0990_SW161_250319**	**ES2508367**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	SW108	**19 Mar 2025**	**0990_SW108_250319**	**ES2508367**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	SW153	**19 Mar 2025**	**0990_SW153_250319**	**ES2508367**	<0.01	*0.02*	0.02	0.04	0.04	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
Twice in wet	**SW016**	**01 Apr 2025**	**0990_SW016_250401**	**ES2509506**	0.02	***0.55***	**0.44**	**0.99**	1.35	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.07	0.03	<0.02	0.10	0.03	<0.02	<0.02	<0.02	<0.02	0.08	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	SW021	**01 Apr 2025**	**0990_SW021_250401**	**ES2509506**	<0.01	***0.15***	**0.13**	**0.28**	0.33	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	SW049	**01 Apr 2025**	**0990_SW049_250401**	**ES2509506**	**0.75**	*15.0*	5.16	20.2	27.7	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.89	0.65	0.05	2.36	0.42	0.32	0.11	<0.02	<0.02	0.96	0.4	<0.05	<0.05	<0.05	<0.05	<0.02	0.04	<0.02
	SW140	**01 Apr 2025**	**0990_SW140_250401**	**ES2509506**	0.04	***0.80***	**0.19**	**0.99**	1.31	<0.05	<0.05	0.12	<0.05	<0.02	<0.02	<0.05	0.02	<0.02	<0.02	0.10	0.02	<0.02	<0.02	0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	SW188	**01 Apr 2025**	**0990_SW188_250401**	**ES2509506**	0.02	***0.32***	**0.32**	**0.64**	0.83	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	0.04	0.03	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	0.04	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	SW350	**01 Apr 2025**	**0990_SW350_250401**	**ES2509506**	<0.01	*0.04*	<0.01	0.04	0.04	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02

Notes:
µg/L: micrograms per litre
LOR: limit of reporting

Appendix C

Sampling Logs

ANZ

FQM - Groundwater Sampling and Purging Record

AECOM

Q4AN(EV)-405-FM1

Project Name:	PFAS DMP	Project Number:	60676.801	PM Name:	[redacted]
Client:	DoD	Project Location:	Katherine	Fieldwork Staff:	

Surface Water/Groundwater?

Well Development or Well Sampling Event? (circle)

Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	☐ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify):	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☐ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Date	Location ID	QAQC	~~Turbidity (NTU)~~	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
17/02/25	Pot 112			2.32	998	7.44	91.1	33.4	Colourless, no odour no sheen
	Pot 128			2.24	1052	7.44	76.5	31.2	" "
	Pot 113	QC100		2.50	811	7.49	77.8	31.2	" "
	Pot 129			4.35	696	7.54	86.0	28	" "
	OTH 119	QC 101		4.77	868	5.32	94.7	31.3	" "
	Pot 126			3.82	732	7.59	95.0	32.1	" "
	Pot 124			1.01	733	7.64	100.2	30.7	" "
	Pot 131			4.58	496	7.48	100.4	41.8	" "
	Pot 114			3.04	726	7.57	106.1	29.2	" "
	OTH 117			5.76	773	7.38	105.0	33.2	
	Pot 120			5.32	900	7.70	107.4	34.9	" "
	Pot 125			6.31	713	7.39	123.1	31.2	" "
			Acceptable Parameter Range:	± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected			QAQC Information	Field Comments
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic		

Approval and Distribution

[redacted]

'Cosscuck monthly in wet season' f PP

ANZ

FQM - Groundwater Sampling and Purging Record

AECOM

Q4AN(EV)-405-FM1

Project Name:	PFAS OMP	Project Number:	60676801	PM Name:	[redacted]	Surface Water/Groundwater:	Groundwater
Client:	Defence	Project Location:	Katherine	Fieldwork Staff:		Well Development or Well Sampling Event? (circle)	

Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	☐ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify):	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☐ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Date	Location ID	QAQC	Turbidity (NTU)	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
18/2	MW808		—	1.04	1038	7.32	101.0	30.3	Brown highly turbid No NS
	MW809		—	1.06	779	7.33	96.4	30.4	light brown low turb No NS
	Pot130		—	4.85	708	7.51	104.6	30.2	(colourless No NS)
	Pot121	—	—	4.07	632	7.46	108.8	26.2	" "
	Pot201	—		3.35	796	7.43	139.7	33.2	
	Pot198	~~QAQC~~	—	—	—	—	—	—	No parameters due to insufficient volume
	Pot127	QC102		1.28	674	7.61	118.5	26.7	colourless, No NS
	OTH118	x lab QC	—	3.12	829	7.36	125.7	30.9	" "
								31.6	
Cosscuck	MW810	—	—	0.79	1095	7.39	130.6		" "
	MW811	—	—	0.97	830	7.41	128.6	30.7	" "
	MW812	—	—	1.71	913	7.40	132.1	31.4	" "
	MW813	—	—	1.78	1329	7.49	144.2	31.2	" "
	Acceptable Parameter Range:			± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Cosscuck GME

Sample Information		Bottles Collected			QAQC Information	Field Comments
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H2SO4)	x 100 mL Amber	x 250 mL Plastic		

[redacted]

AECOM

Sampling round: Feb PP+ FTA **Location:** Katherine **Project number & name:** 60676801

PM [redacted] **Field sta** [redacted] **Client:** Dod

Date	YSI #	Temp (°C)	pH 4		pH 7		DO (100%)		EC 1413 (µS/cm)		ORP (mV)		Initials
			Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	
18/2/25	B	32.4	4.03	4.00	6.99	7.00	100	100	1420	1413	228.7	232.4	IS
							100						
							100						
							100						
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Notes:

ANZ

FQM - Groundwater Sampling and Purging Record

Project Name:	OMP - Private Property	Project Number:	60676801	PM Name:	[redacted]	Surface Water/Groundwater:	Groundwater
Client:	Defence	Project Location:		Fieldwork Staff:		Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☑ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	☐ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole	no reusable equip.	☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☐ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Location ID	Date	Time	QA/QC	Turbidity (NTU)	DO (% or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Colour, turbidity (low-high), odour (HC, sulfur, organic?), flow if SW (stagnant, low-high), visual comments (suspended solids, algae, rubbish?)
POT125	17/03/25	1610	-	-	3.49	684	7.44	151.5	33.1	Colourless, low turb, NO, NS
POT130	18/03/25	0742	-	-	2.68	684	7.36	133.8	29.9	" "
POT121	↓	0801	-	-	3.62	627	7.44	118.0	28.6	" "
POT201	↓	0820	-	-	1.30	685	7.38	122.4	30.5	" "
POT198	↓	0845	-	-	0.47	679	7.39	134.2	29.2	" "
OTH118	↓	1010	-	-	1.29	666	7.48	146.8	31.1	" "
POT127	↓	1018	-	-	0.72	645	7.45	145.9	29.7	" "
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C		± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected			QA/QC Information
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)	QC400_250317
		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic	QC400_250318
		14 x 2 2mL PFAS			QC500_250318

Field Comments

Bore volume calculation, bore condition, fate of tubing, redox correction etc.

NO rinsate QC's required - disposable equip. only

Approval and Distribution

[redacted]

AECOM

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	Priv. Property	Project Number:	60676801	PM Name:	[redacted]	Surface Water/Groundwater:	Groundwater
Client:	Defence	Project Location:	TDL	Fieldwork Staff:	[redacted]	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☑ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	☐ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / (N)	☐ Disposable	☐ Bailer ☑ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole	No reusable equip	☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☑ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Location ID	Date	Time	QA/QC	Turbidity (NTU)	DO (% or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Colour, turbidity (low-high), odour (HC, sulfur, organic?), flow if SW (stagnant, low-high), visual comments (suspended solids, algae, rubbish?)
POT112	17/03/25	10:29	-	-	2.81	883	7.08	230.4	34.2	Colourless, low turb, NO, NS
POT128		1043	QC100+200	-	2.15	864	7.22	169.9	31.2	" "
POT113		1108	QC101+201	-	2.39	814	7.43	154.3	31.4	" "
POT129		1123	-	-	3.18	669	7.42	154.0	30.0	" "
OTH119		1147	-	-	1.46	993	7.24	221.5	30.7	" "
POT126		1200	-	-	1.47	686	7.47	183.4	32.0	" "
POT131		1214	-	-	3.05	509	7.50	167.0	36.8	" "
POT114		1236	-	-	1.32	682	7.40	169.8	32.2	" "
POT124		1247	-	-	1.56	747	7.45	169.0	30.8	" "
OTH117		1525	-	-	1.45	697	7.51	164.4	32.1	" "
POT120	↓	~~138~~ 1535	-	-	3.30	702	7.59	164.3	32.9	" "
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C		± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected					QA/QC Information	Field Comments
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous	x 60 mL metals (HNO_3)	QC100 200 } POT128	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	✓		x 40 mL Vial (H_2SO_4)		x 100 mL Amber	x 250 mL Plastic	QC101 201 } POT113	Extra lab QC for ~~POT~~ POT128 + POT113
		26	x 250mL PFAS					
		2	x 250mL PFAS					

Approval and Distribution

[redacted]

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ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	QMP - Biannual SW	Project Number:	60676801	PM Name:	[redacted]	Surface Water/Groundwater:	Surface Water
Client:	Defence	Project Location:	TDL	Fieldwork Staff:	[redacted]	~~Well Development or Well Sampling Event? (circle)~~	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☑ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model: YSI Pro Plus	☐ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☑ Other (specify) grab	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☑ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Location ID	Date	Time	QA/QC	Turbidity (NTU)	DO (% or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Colour, turbidity (low-high), odour (HC, sulfur, organic?), flow if SW (stagnant, low-high), visual comments (suspended solids, algae, rubbish?)
SW153	19/03/25	0945	-	-	2.29	699	7.20	116.7	31.3	Colourless, low turb, NO, NS, mod flow
SW110	↓	1014	QC100+200	-	3.84	58.6	7.24	100.4	32.1	light brown, mod turb, NO, NS, high flow
SW161	↓	1101	-	-	4.34	40.7	7.24	106.1	31.5	light brown, mod turb, NO, NS, mod flow
SW108	↓	1148	-	-	3.98	51.0	7.15	116.5	31.2	light brown, mod turb, NO, NS, high flow
SW100	↓	1202	-	-	3.74	62.3	7.16	119.1	31.1	brown, high turb, NO, NS, SS, high flow
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C		± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected						QA/QC Information	Field Commets
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)	QC100 200 } SW110	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS full suite		x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic		QC300_250319
		14	x 2.20mL PFAS						400_250319
									500_250319 (shared with cessrock QME)

Approval and Distribution

[redacted]

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FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	POT131
Project Name:	PFASOMP	Project Number:	60676001	PM Name:	[redacted]	Sample Date:	30-04-25
Client:	DoD	Project Location:	RAAF Tindal	Fieldwork Staff:		Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model: YSI	☑ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☑ Other (specify) GRAB	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☑ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Location	Date	Time	QA/QC	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
POT131	30/04/25	16:30	—	2.06	659	7.60	70.9	27.3	Grab from tap, colourless, no od/sheen.
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected				QA/QC Information
Field Filtered:	Unfiltered:		x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)	
0	2		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic	
		2	x 1FNS			

Field Comments

Bore volume calculation, bore condition, fate of tubing, redox correction etc.

Missed P.P from April 2025 sampling

Approval and Distribution

[redacted]

ANZ

FQM - Groundwater Sampling and Purging Record

AECOM

Q4AN(EV)-405-FM1

Project Name:	PM AD	Project Number:	60676801	PM Name:	[redacted]	Surface Water/Groundwater:	
Client:	Defence	Project Location:	Katherine	Fieldwork Staff:		Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	" Decontaminated	" Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	" Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	" Disposable	" Bailer " Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	" Other (specify)	" Peristaltic Pump " Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: " Downhole		" Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	" Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Location ID	Date	Time	QA/QC	Turbidity (NTU)	DO (% or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Colour, turbidity (low-high), odour (HC, sulfur, organic?), flow if SW (stagnant, low-high), visual comments (suspended solids, algae, rubbish?)
Pot112	15/5/25				2.15	895	7.02	64.7	31.7	GC, NO NS, Colourless, low turb
Pot128					3.07	929	7.06	48.9	31.1	
Pot113			QC100		2.84	1050	6.99	46.9	31.0	
Pot129					4.68	310	7.23	71.3	29.2	
Pot114					1.43	780	7.07	58.8	33.0	
OTH119					3.21	1126	5.98	69.0	30.6	
Pot126					2.37	446	7.16	55.6	35.1	
Pot124					3.65	836	7.08	62.4	30.7	
Pot198					2.77	883	7.09	41.7	37.9	
OTH117					3.76	829	6.02	68.2	37.0	
Pot125					5.48	712	7.68	51.0	30.9	
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C		± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected			QA/QC Information	Field Comments
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic		

[redacted]

AECOM

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	PMAP	Project Number:	606 / 680	PM Name:	[redacted]	Surface Water/Groundwater:	
Client:	Defence	Project Location:	Katherine	Fieldwork Staff:		Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method		Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	" Decontaminated	" Low Flow Pump rate:		Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	" Dedicated	Intake depth:		Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	" Disposable	" Bailer	" Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	" Other (specify)	" Peristaltic Pump	" Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: " Downhole		" Other (specify)		Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	" Retrieved					Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):			

Water Quality Parameters

Location ID	Date	Time	QA/QC	Turbidity (NTU)	DO (% or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Colour, turbidity (low-high), odour (HC, sulfur, organic?), flow if SW (stagnant, low-high), visual comments (suspended solids, algae, rubbish?)
Pot120	14/4				3.45	789	7.59	98.6	32.9	GC, NO, NS, colourless, low turb
MW808					1.11	1041	7.03	30.6	30.8	
Pot127					8.81	133.6	8.34	44.2	25.4	
OTH118					1.53	759	7.02	72.7	30.4	
Pot125					5.48	712	7.68	51.0	30.9	
MW809					1.36	801	7.03	34.3	30.4	
MW810					0.71	1039	6.95	-24.8	29.3	
Pot130					3.63	753	7.14	19.6	30.2	
MW813					1.60	1397	6.90	36.0	28.4	
Pot121					4.48	646	7.46	41.0	25.4	
Pot201					3.84	683	7.49	67.1	25.6	
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C		± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected			QA/QC Information	Field Comments
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic		

Approval and Distribution

[redacted]

ANZ

FQM - NAPL and Groundwater Level Gauging Record

AECOM

Q4AN(EV)-414-FM1

Project Name:	PFASOMP	Project Location:	Tindal	PM Name:	J.G
Project Number:	60676801	Client:	DoD	Fieldwork Staff Name:	P.H + IS

Confirm NAPL and groundwater levels by repeat measurements. All columns must be completed. If NAPL is not present in a well write 'ND' (Not Detected) in the relevant column.

Field Data

Well ID	Date (dd/mm/yy)	Time (24hr:mm)	Depth to LNAPL (mBTOC)	Depth to Groundwater (mBTOC)	LNAPL Thickness (m)	Total Well Depth (mBTOC)	HS Install (m)	PFASMGMT Med-Perf Mont. (tick)	Comments (well condition, odour or sheen on probe, sediment of probe, LNAPL colour and viscosity)
DT H11	30.4.25	11:30	ND	11.424	ND	750M	48m		G.C, N.O, N.S, tubing in 100m well
MW244		11.40	9.960	9.961	0.001	NM	12m		G.C, HC odour, NS thin LNAPL
MW802S		12:18	ND	3.164	–	10.48	17m		G.C, N.O, NS, datalogger present
MW802I		12:22	ND	3.008	–	14.97	13m		G.C, NO, NS, datalogger present
MW802D		12:28	ND	2.990	–	19.34	8.8m		G.C, NO, NS, data logger present
MW145I		12:45	ND	2.252	–	15.40	11.1m	✓	G.C, NO, NS
MW127		13:15	ND	1.377	–	24.70	4.5M	✓	G.C, NO, NS
MW818		13:40	ND	1.726		8.88	5.0m	✓	May have replaced MW151, not MW152
MW147		14:10	ND	2.633	–	16.98	10M	✓	G.C, NO, NS
MW806I		14:30	ND	2.731	–	19.00	15.5m	✓	G.C, NO, NS
MW131	1.05.25	7:40	NM	NM	–	NM	–		Well destroyed from land clearing-pics.
MW201D		8:52	ND	5.770	–	42.0	38m	✓	G.C, ND, NS.
MW201I		9:00	ND	5.991	–	33.22	31M	✓	G.C, NO, NS
MW203		9:19	ND	5.275	ND	750M	53M	✓	G.C, NO, NS, old datalogger in.
MW207A		9:35	ND	4.432	–	20.59	18m	✓	G.C, NO, NS
MW202		9:45	ND	9.012	–	30.49	26.3m	✓	Monument below casing, fire nearby, NO, NS
MW155		10:00	ND	5.333	–	20.20	7m	✓	G.C, NO, NS
MW103		10:23	ND	3.095	–	18.92	6m	✓	G.C, NO, NS
MW107		10:55	ND	5.384	–	13.54	7.3m		G.C, NO, NS.

Measurement Equipment				Notes/Comments
Make & Model:	Solinst 112	Supplier:	AECOM	(PID) - photo ionisation detector, (ppm) - parts per million, (LNAPL) - light non-aqueous phase liquids; (DNAPL) - dense light non-aqueous phase liquid; (mBTOC) - metres below top of casing
Serial No.:	DRW002	Calibration Report Provided?	N/A.	G.C - good condition NS - no sheen N.O - no odour N-M - not measured / detected

Approval and Distribution

[redacted]

ANZ

FQM - NAPL and Groundwater Level Gauging Record

AECOM

Q4AN(EV)-414-FM1

Project Name:	PFASOMP Biannual GME	Project Location:	Tindal	PM Name:	[redacted]
Project Number:	60676801	Client:	DoD	Fieldwork Staff Name:	[redacted]

Confirm NAPL and groundwater levels by repeat measurements. All columns must be completed. If NAPL is not present in a well write 'ND' (Not Detected) in the relevant column.

Field Data

Well ID	Date (dd/mm/yy)	Time (24hr:mm)	Depth to LNAPL (mBTOC)	Depth to Groundwater (mBTOC)	LNAPL Thickness (m)	Total Well Depth (mBTOC)	HS Install (m)	PFASMGMT Med-Perf Mont. (tick)	Comments (well condition, odour or sheen on probe, sediment of probe, LNAPL colour and viscosity)
MWB01S	01.05.25	10:30	—						Locked to get gauge data from logger @ 10:30 AM
MW110		11:20	ND	3.102	—	12.05	5.1m		G-C, NO, NS
MW111		11:25	ND	4.375	—	8.34	6m		G-C, NO, NS, blocked?
MW111D		11:35	ND	4.361	—	>50	47m		G-C, NO, NS
MW403		12:00	ND	8.452	—	10.52	9.5m		G-C, NO, NS
MW118		12:35	ND	ND	—	NM	18.3m		Blocked w roots @ 10.32mbTOC, dry
MW118I		12:40	ND	15.342	—	34.20	32m		G-C, NO, NS
MW118D		12:45	ND	15.402	—	>50m	47m		G-C, NO, NS
MW138		14:28	ND	9.422	—	19.60	11.4m		G-C, NO, NS
MW137		14:30	ND	12.219	—	14.219	NM		G-C, NO, NS, datalogger at base
MWB14		15:05	ND	16.655	—	30.98	30m		G-C, NO, NS
MWB15		15:35	ND	13.575	—	31.75	30m		G-C, NO, NS
MW400	—	17:00	ND	8.682	—	>50m	33.5m		G-C, NO, NS, datalogger in well
MWB01S	06.05.25	14:55	ND	3.022	—	NM	6.5		G-C, NO, NS, datalogger in well
~~MWMT~~									

Measurement Equipment

Make & Model:	Solinst 122	Supplier:	AECOM
Serial No.:	DRW002	Calibration Report Provided?	N/A

Notes/Comments

(PID) - photo ionisation detector, (ppm) - parts per million, (LNAPL) - light non-aqueous phase liquids; (DNAPL) - dense light non-aqueous phase liquid; (mBTOC) - metres below top of casing

NO - no sheen G-C - good condition
NS - no odour

Approval and Distribution

[redacted]

ANZ

FQM - NAPL and Groundwater Level Gauging Record

Project Name:	PMAP OMP	**Project Location:**	Tindal	**PM Name:**	[redacted]
Project Number:	60676801	**Client:**	Defence	**Fieldwork Staff Name:**	

Confirm NAPL and groundwater levels by repeat measurements. All columns must be completed. If NAPL is not present in a well write 'ND' (Not Detected) in the relevant column.

Field Data

Well ID	Date (dd/mm/yy)	Time (24hr:mm)	Depth to LNAPL (mBTOC)	Depth to Groundwater (mBTOC)	LNAPL Thickness (m)	Total Well Depth (mBTOC)	HS Install (m)	PFASMGMT Med-Perf Mont. (tick)	Comments (well condition, odour or sheen on probe, sediment of probe, LNAPL colour and viscosity)
MW406	30/4	12:20	ND	2.967	ND	19.22	9.00	✓	GC, no, no sediment, ns
MW227	30/4	12:35	ND	2.363	ND	16.30	[illegible]7m	✓	ant nest inside monument, no, ns
MW146	30/4	12:45	ND	1.946	ND	17.49	15.00		GC, no, no sheen
MW152?	30/4	1:40	ND	2.427	ND	7.52	7.0	✓	sediment on probe, no, ns
MW149	30/4	1:55	ND	3.749	ND	17.17	13		Bent gatic lid
MW129	30/4	[illegible]:25	ND	3.064	ND	19.51	5		GC, no, ns
MW285	30/4	13:36	ND	2.248	ND	20.87	5[illegible].0		no bolts, no, ns, flush gatic
MW278	30/4	13:50	ND	7.074	ND	22.95	5		flush, GC, NO, NS
MW133	1/5	7:45	ND	2.863	ND	9.20	4.8.		GC, no, ns
MW130	1/5	8:10	ND	7.369	ND	19.24	9.4		"
MW232	1/5	8:45	ND	5.536	ND	18.88	[illegible]9	✓	"
MW231	1/5	900	ND	3.464	ND	23.29	5.5		"
MW803S	1/5	9:05	ND	3.679	ND	10.99	9 [illegible]	[illegible]	"
MW803I	1/5	9:10	ND	5.451	ND	15.06	14.0	[illegible]	"
MW803D	1/5	9:15	ND	5.517	ND	25.32	[illegible]21	[illegible]	"
MW404	1/5	9:50	ND	5.337	ND	19.41	[illegible]10	✓	"
MW104	1/5	10.20	ND	4.475	ND	20.56	6.5		"
MW[illegible]06	1/5	10:55	ND	4.447	ND	16.35	6.5		"
MW109	1/5	11:10	ND	3.961	ND	7.13	6		
MW109D	1/5	11:15	ND	3.927	ND	20.46	18.5		

Measurement Equipment				Notes/Comments
Make & Model:		**Supplier:**		(PID) - photo ionisation detector; (ppm) - parts per million, (LNAPL) - light non-aqueous phase liquids; (DNAPL) - dense light non-aqueous phase liquid; (mBTOC) - metres below top of casing
Serial No.:		**Calibration Report Provided?**		

Approval and Distribution

[redacted]

ANZ

FQM - NAPL and Groundwater Level Gauging Record

AECOM

Q4AN(EV)-414-FM1

Project Name:	DMAP OMP	**Project Location:**	Tindall	**PM Name:**	[redacted]
Project Number:	60676801	**Client:**	DoD	**Fieldwork Staff Name:**	

Confirm NAPL and groundwater levels by repeat measurements. All columns must be completed. If NAPL is not present in a well write 'ND' (Not Detected) in the relevant column.

Field Data

Well ID	Date (dd/mm/yy)	Time (24hr:mm)	Depth to LNAPL (mBTOC)	Depth to Groundwater (mBTOC)	LNAPL Thickness (m)	Total Well Depth (mBTOC)	HS Install (m)*	PFASMGMT Med-Perf Mont. (tick)	Comments (well condition, odour or sheen on probe, sediment of probe, LNAPL colour and viscosity)
MW119	1/5	1210	ND	ND	ND	–	12m		blocked with roots at 8.20m
MW117	1/5	1230	ND	ND	ND	–	13m		blocked with roots at 8.90m
MW142	1/5	2:25	ND	7.665	ND	18.80	9.6		GC, no, NS
MW144	1/5	2:50	ND	7.901	ND	20.10	10		"
MW140	1/5	305	ND	9.997	ND	15.13	12		unt not in flush gatic
MW130	1/5	3:30	ND	10.224	ND	25.52	19.4		GC, no, NS
MW135	1/5	1623	ND	17.154	ND	19.76	19		"
MW134	1/5	16:40	ND	9.991	ND	21.45	12m		Rootlets present, NO, NS
~~MW130~~									

Measurement Equipment

Make & Model:		**Supplier:**	
Serial No.:		**Calibration Report Provided?**	

Notes/Comments

(PID) - photo ionisation detector; (ppm) - parts per million; (LNAPL) - light non-aqueous phase liquids; (DNAPL) - dense light non-aqueous phase liquid; (mBTOC) - metres below top of casing

[redacted]

AECOM

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	PFAS SMP AME	Project Number:	60676801	PM Name:	[redacted]	Bore ID:	—
Client:	DoD	Project Location:	Katherine	Fieldwork Staff:		Sample Date:	02.05.25
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.: A1RMET	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model: 751	☑ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / (N)	☑ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☒ Other (specify) GRAB	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☑ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Location	Date	Time	SWL ~~QA/QC~~	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
OTH120	2/05/25	9:20	—	4.06	928	7.42	173.7	28.5	Collected from sprinkler fed by bore, colourless, NO, NS
OTH114	2/5/25	10:00	—	2.18	608	6.86	193.7	29.6	colourless, no, ns, collected from tap
OTH1B	2/5/25	1020	—	4.39	613	7.06	197.5	30.5	colourless, N.O, N.S, collected from tap
MW13T	6/5/25	8:25	12.242	1.84	783	6.94	94.2	29.3	Pale brown, low turb, N.O, N.S.
MW13B	6/5/25	8:45	9.552	1.34	895	6.91	-78.3	29.6	Pale brown, low turb, N.O, NS.
OTH115	6/5/25	9:40	—	3.22	778	6.88	12.2	29.7	Colourless, low turb, N.O, NS.
MW36	6/5/25	9:50	10.242	1.37	812	7.16	13.3	30.7	Pale brown, low turbidity, NO, NS
MW815	6/5/25	10:15	13.702	3.21	795	6.89	17.0	30.6	Pale brown, Mod turb, NO, NS
MW33	6/5/25	11:25	3.082	0.95	500	7.14	-77.2	29.3	Colourless, low turb, brown flocculant, rootlets.
MW201I	6/5/25	12:00	6.864	0.65	590	7.18	-224.3	30.6	Colourless, low turb, black suspended solids, NO, NS.
MW201D	6/5/25	12:18	6.512	0.47	271.2	6.62	-92.3	30.8	Pale brown, low turbidity, NO, NS.
MW202	6/5/25	12:17	9.015	0.80	548	6.61	-154.2	31.1	Colourless, low turb, NO, NS
MW103	6/5/25	14:15	3.099	2.99	755	6.89	-66.6	30.9	Orangebrown, low turb, NO, NS
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected			QA/QC Information	Field Comments
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)	MW13B	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
0	2	x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic	MW201I	No - no odour
		2 PFAS.				NS - no sheen

[redacted]

AECOM

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	PFAS DMP GME	Project Number:	60676801	PM Name:	[redacted]	Bore ID:	—
Client:	DoD	Project Location:	RAAF Tindal	Fieldwork Staff:	[redacted]	Sample Date:	Multi
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size: FL	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model: WS1	☑ Dedicated	Intake depth:	Hydrasleeve Type: HDPE	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / (N)	☐ Disposable	☐ Bailer ☑ Hydrasleeve	Sampling Depth (m-pvc): –	1 Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time: —	2 Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time: —	3 Hydrasleeve out
	Key Type (if applicable):	☑ Retrieved				4 Parameters

Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:	Total purged volume (L):

Water Quality Parameters

Location	Date	Time	SWL ~~GAUGE~~ (mbTOC)	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
MW207A	06/05/25	14:20	4.512	1.10	755	6.87	-37.2	30.6	Pale brown, low turb, NO, NS.
MW09	06/05/25	15:00	4.072	0.46	807	6.92	-167.2	30.6	Colourless, low turb, NO, NS.
MW109D		15:10	4.039	2.01	785	6.90	-111.2	30.6	Pale brown, low turb, NO, NS
MW111		15:20	4.481	4.01	829	6.91	-160.2	31.6	Colourless, low turb, NO, NS
MW111D		15:35	4.465	1.16	783	6.89	-140.2	31.9	Colourless, low turb, strong sulfur odr, NS
MW430		16:05	8.472	0.44	800	6.97	-115.2	30.6	Colourless, low turb, NO, NS.
MW117		16:45	—						Blocked w roots @ 8.9m, no sample
JTH112	07.05.25	08:50	~	1.02	902	6.89	144.2	28.1	Collected from tap, colourless, low turb, NO, NS
MW285		09:10	2.382	0.68	692	8.90	127.2	32.2	Colourless, low turb, NO, NS.
MW278		09:30	7.172	1.98	228.3	6.48	133.2	32.4	Colourless, low turb, NO, NS
MW140		10:07	5.982	3.29	466	7.24	106.2	30.9	Pale brown, low turb, NO, NS
MW127		13:00	1.512	1.05	750	6.49	117.2	30.2	Colourless, ~~pale~~ low turb, NO, NS
MW818		13:30	1.550	1.00	785	7.02	-43.2	31.2	Pale brown, low turb, NO, NS
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected			QA/QC Information	Field Comments
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)	MW109	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic	MW140	
0	2	2 x PFAS			MW285	

Approval and Distribution

[redacted]

AECOM

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	PFASOMP GME	Project Number:	60676801	PM Name:	[redacted]	Bore ID:	
Client:	DoD	Project Location:	RAAF Tindal	Fieldwork Staff:	[redacted]	Sample Date:	
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☑ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size: 1 L	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model: 451	☑ Dedicated	Intake depth:	Hydrasleeve Type: HDPE	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	☑ Disposable	☐ Bailer ☑ Hydrasleeve	Sampling Depth (m-pvc): –	1 Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time: –	2 Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time: –	3 Hydrasleeve out
	Key Type (if applicable):	☑ Retrieved				4 Parameters

Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:	Total purged volume (L):

Water Quality Parameters

Location	Date	Time	~~GWL~~ SWL (mbTOC)	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
MW146	7-05-25	13:35	2.062	0.32	750	6.95	17.3	31.3	Colourless, low turb, NO, NS
MW127	↓	14:45	2.246	1.72	503	7.23	-30.2	31.0	Colourless, low turb, NO, NS.
~~MW145S~~	↓	~~15:20~~						~~[illegible]~~	~~Dissolved parameters not [illegible] recorded~~
MW145I	↓	15:00	2.420	1.98	693	6.89	48.2	30.9	Colourless, low turb, NO, NS.
MW152	7-05-25	13:50	2.450	0.32	1026	7.22	-29.3	32.1	Pale brown, low turb, NO, NS
MW801S	8/5/25	0830	3.034	1.71	827	6.84	93.1	27.3	Pale brown, low turb, NO, NS
MW134	↓	0940	8.082	1.35	843	6.64	88.8	29.0	brown, mod turb, NO, NS. heavily root impacted
MW135	↓	1010	17.520	1.90	833	6.89	102.0	30.1	Colourless, low turb, NO, NS
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected			QA/QC Information	Field Comments
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
0	2	x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic		
		2 x PFAS				

Approval and Distribution

[redacted]

AECOM

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	PFAS MGMT	Project Number:	60676801	PM Name:	[redacted]	Bore ID:	
Client:	DOD	Project Location:	TDL	Fieldwork Staff:	[redacted]	Sample Date:	
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.: 19G102636	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size: LL	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model: YSI Pro Plus	☐ Dedicated	Intake depth:	Hydrasleeve Type: HDPE	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / (N)	☐ Disposable	☐ Bailer ☑ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☑ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Location	Date	Time	QA/QC SWL	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
MW404	6/5/25	~~1200~~ 1158	5.412	1.50	637	6.75	42.7	31.7	Colourless, low turb, NO, NS
MW232	↓	1210	5.630	1.62	948	6.83	58.8	31.6	Colourless, low turb, NO, NS
MW203		1230	5.350	0.65	849	6.98	-131.9	31.9	Colourless, low turb, Sulfur odour, NS, black SS
MW155	↓	1345	5.380	0.42	806	6.81	-9.1	31.0	Colourless → light brown, mod turb, NO, NS, sediment @ bottom
MW806I	7/5/25	1205		0.42	701	6.81	-43.7	32.9	light brown, mod turb, Sulfur odour, NS
MW147	↓	1340		1.16	660	7.33	79.5	32.1	Colourless, low turb, NO, NS
MW406	↓	1350		0.48	268.6	7.37	56.6	32.9	" ~ mild Sulfur odour
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected			QA/QC Information	Field Comments
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)	QC111/211 @ MW232	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS	x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic		

Approval and Distribution

[redacted]

AECOM

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	PFAS CMD	Project Number:	60676801	PM Name:	[redacted]	Bore ID:	[illegible]
Client:	DoD	Project Location:	TDL	Fieldwork Staff:	[redacted]	Sample Date:	06/05/25
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.: 19G 102636	☑ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size: 1m	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model: YSI Pro Plus	☐ Dedicated	Intake depth:	Hydrasleeve Type: HDPE	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / (N)	☑ Disposable	☐ Bailer ☑ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☑ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Location	Date	Time	~~QA/QC~~ SWL	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
MW144	06/05/25	0832	8.050	2.36	1017	6.91	150.4	30.8	Colourless, low turb, NO, NS
MW142		0855	7.814	1.13	758	6.83	85.3	29.7	Colourless, low turb, NO, NS, Sand in HS
MW814		0930	16.752	1.34	764	6.98	99.6	31.0	" "
MW400		0955	8.690	1.10	777	6.84	-25.0	30.2	Colourless, low turb, Sulfur odour, NS
MW130		1125	7.414	3.72	797	6.87	94.5	29.7	Colourless, low turb, NO, NS, low water in HS
MW231		1245	3.562	0.92	214.3	6.08	1.7	31.7	Cloudy white, Mod turb, NO, NS
MW803D		1250	5.590	0.53	505	6.95	-93.7	32.1	Colourless, low turb, NO, NS
MW803I		1258	5.540	0.58	1346	6.64	-140.5	31.7	Colourless, low turb, Sulfur odour, NS, black SS
MW803S		1305	5.780	0.56	343.9	6.53	-49.8	31.4	Colourless, low turb, NO, NS
MW104		1420	4.565	1.33	768	6.82	63.6	30.7	" "
MW106		1440	4.530	0.46	972	6.87	-12.1	31.2	" "
MW107		1500	5.460	0.57	776	6.86	-13.6	30.7	light brown, high turb, SS, NO, NS
MW110		1515	3.019	0.64	777	6.82	56.4	30.8	light brown, mod turb, SS, NO, NS
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected			QA/QC Information	Field Comments
Field Filtered:	Unfiltered: PFAS, PFAS LL	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)	QC110/210 @ MW400	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic		

Approval and Distribution

[redacted]

AECOM

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	PFAS OMP	Project Number:	60676801	PM Name:	[redacted]	Bore ID:	
Client:	DoD	Project Location:	TDL	Fieldwork Staff:	[redacted]	Sample Date:	
						Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.: 19G102636	☑ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size: 1 L	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model: YSI Pro plus	☐ Dedicated	Intake depth:	Hydrasleeve Type: HDPE	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / (N)	☑ Disposable	☐ Bailer ☑ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☑ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Location	Date	Time	QA/QC SWL	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
MW119	6/5/25	1615							NO Sample - blocked ~~/dry~~
MW118	↓	1630							No Sample - blocked
MW181		1635	15.320	1.15	817	6.76	22.8	30.9	Colourless, low turb, NO, NS
MW18D	↓	1645	15.350	0.66	772	6.76	2.7	30.9	" - mild sulfur odour
OTH111	7/5/25	0845	11.430	1.96	584	6.95	135.2	30.3	Colourless, low turb, NO, NS, some organic debris throughout
QC112 QC212 – { MW244		0910	9.980	0.57	525	6.969	-63.5	33.0	Colourless, low turb, HC odour, NS, sediment @ bottom
POT111		1010	–	2.72	716	7.16	90.8	29.6	Colourless ~~→ light brown, mod~~ low turb, NO, NS, ~~SS throughout~~
MW129		1250		1.46	471	6.63	100.3	33.9	Colourless → light brown, mod turb, NO, NS, SS throughout
~~MW806I~~		~~1305~~		~~0.42~~	~~701~~	~~6.81~~	~~-43.7~~	~~32.9~~	~~light brown, mod turb, Sulfur odour, NS~~ wrong sheet
MW149		1320		1.02	575	7.04	59.0	31.6	Colourless, low turb, NO, NS
MW802D		1405	3.104	0.96	737	6.86	-10.1	32.1	Colourless, low turb, NS, mild sulfur odour
MW802I	↓	1415	3.210	0.56	763	6.89	61.1	32.0	Colourless, low turb, NO, NS
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected			QA/QC Information	Field Comments
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)	QC310 - rinsate - 1P	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS	x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic	QC410 - field blank	QC212 @ MW244
					QC510 - Trip blank	

Approval and Distribution

[redacted]

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ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

						Bore ID:	
Project Name:	PFAS OMP	Project Number:	60676801	PM Name:	[redacted]	Sample Date:	
Client:	DoD	Project Location:	TDL	Fieldwork Staff:		Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.: 19G102656	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size: 1L	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model: YSI Pro Plus	☐ Dedicated	Intake depth:	Hydrasleeve Type: HDPE	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / (N)	☐ Disposable	☐ Bailer ☑ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☑ Retrieved				Parameters

Calculated bore volume (L): | Includes/ excludes bore annulus (circle) | # purge volumes removed: | Total purged volume (L):

Water Quality Parameters

Location	Date	Time	QA/QC	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
MW802S	07/5/25	1437	SWL 3.279	0.75	847	7.26	-99.8	32.5	Colourless, low turb, Sulfur odour, NS, black sediment
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected			QA/QC Information	Field Comments
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)	QC311 - rinsate - 1P	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
	PFAS	x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic	411 - field blank	
					511 - trip blank	
					250507	

Approval and Distribution

[redacted]

TINDAL OMP SW - APR25 -

ANZ

Surface Water Sampling Record

Project Name:	TINDAL OMP	Project Number:	60676801	PM Name:	[redacted]	Sample Date:	1 / 4 / 25
Client:	Defence	Project Location:	Tindal	Fieldwork Staff:		YSI ID:	B.

Water Quality Parameters

Locaiton ID	Date	Time	Turbidity (NTU)	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity, Flow
SW140	1/4/25	0840	—	1.51	414.2	8.32	58.0	31.1	N/O. Clear. Low Turbidity. minor flow.
SW049	1/4/25	0858	—	1.23	393.8	8.34	66.2	27.6	" " " " +foam on Surface.
SW188	1/4/25	0930	—	1.55	737	8.22	58.3	28.8	" " " High flow
SW350	1/4/25	1056	—	1.31	656	8.30	52.7	28.8	" " Med turbidity. Low flow.
SW016	1/4/25	1155	—	1.50	728	8.39	52.6	29.3	" " " med flow
SW021	1/4/25	1215	—	1.49	852	8.51	51.1	29.8	" Brown. " "

Analytes Sampled for:

Field Filtered:

Unfiltered:

Bottles Collected

	x 40 mL Vial (HCl)		x 60 mL Ferrous		x 60 mL metals (HNO_3)
	x 40 mL Vial (H_2SO_4)		x 100 mL Amber		x 250 mL Plastic

QA/QC Information

Field Commets

QC Samples at SW140

[redacted]

OMP SW + WQMP SW APR25

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ANZ

FQM - Sample QAQC Tracking Sheet

Q4AN(EV)-011-FM1

Project Name:	OMP + WQMP SW	Project Number:	60676801
Project Location:	Tindal	Client:	Defence
PM Name:	[redacted]	Fieldwork Staff:	[redacted]

QAQC Information

	QAQC ID	Primary Sample ID	Sample Type	Batch Number
WQMP	0990-QC100-250401	SW188		
	0990-QC200-250401	SW188		
	0990-QC300-250401			
	0990-QC400-250401			
	0990-QC500-250401			
OMP	0990-QC100-250402	SW140		
	0990-QC200-250402	SW140		
	0990-QC300-250402			
	0990-QC400-250402			
	0990-QC500-250402			
Auto Sampler.	0990-QC100-250320	SW016-1		
	0990-QC200-250320	SW016-1		
	0990-QC300-250402			
	0990-QC400-250402			
	0990-QC500-250402			

QA\QC Project Requirements

QAQC	Required		Frequency		Method Used
Field Duplicates	☐ Yes	☐ No	☐ 1 in 10	☐ 1 in 20	
Field Triplicates	☐ Yes	☐ No	☐ 1 in 10	☑ 1 in 20	
Rinsate Blanks	☐ Yes	☐ No	☐ 1 per matrix/equipment/day		
Field Blanks	☐ Yes	☐ No	☐ 1 per day		
Trip Blanks	☐ Yes	☐ No	☐ 1 per ice chest		
Trip Spikes	☐ Yes	☐ No	☐ 1 per ice chest		

Approval and Distribution

[redacted]

NOTE: OMP Dates Changed to "_250401"

Appendix D

Calibration Certificates

AECOM

EQUIPMENT CALIBRATION FORM

Technician: [redacted]

Date & Time: 6/05/24

INSTRUMENT IDENTIFICATION

Model Number:

Serial Number:

Instrument Type:

INSPECTION RECORD (YES/NO):

Batteries Checked: Y

Membrane Cap/Electrolyte Replacement Required? N

Electrodes Cleaned/Checked: Y

CALIBRATION DETAILS:

	Calibration Solution	Standard Value	Reading Before Cal		Reading After Cal		Acceptable pH mV in buffer
			pH	pH mV	pH	pH mV	
pH (calibrate before redox)	Buffer 7.00	7.00 pH	6.98	-4.6			0 mV + 50 mV
	Buffer 4.00	4.00 pH	4.03	170.9			+165 to +180 from 7 buffer mV value
	Buffer 10.01	10.01 pH					-165 to -180 from 7 buffer mV value
pH slope in GLP record after calibration:							Acceptable = 55 to 60 pH/mV (ideal is 59.16 mV/pH)

	Calibration Solution	Standard Value	Reading Before Cal	Reading After Cal	
Dissolved Oxygen	Air	100%	100.0 %	100.0 %	
	Zero Dissolved Oxygen		%	%	
DO sensor value @ ≈ 25 °C in 100% saturated air:					Average 6.15 uA (min. 4.31 uA, max. 8.00 uA)

	Calibration Solution	Standard Value	Reading Before Cal	Reading After Cal	
Redox	Zobell's Solution	230.8 mV @ 25.9 °C	224.6	231.6	
ORP Cal Offset in GLP record after cal:					Acceptable = -100 to 50

	Calibration Solution	Standard Value	Reading Before Cal	Reading After Cal	
Conductivtiy (Specific)	1413 us/cm	1413	1486	1414	
Conductivity cell constant:					Acceptable range is 4.0 - 6.0

AECOM

EQUIPMENT BUMP TEST FORM

Technician: [redacted]

Date & Time:

INSTRUMENT IDENTIFICATION

Model Number:

Serial Number:

Instrument Type:

INSPECTION RECORD (YES/NO):

Batteries Checked: **Membrane Cap/Electrolyte Replacement Required?**

Electrodes Cleaned/Checked:

BUMP TEST DETAILS:

re-Calibration req.

Date & Time: 7/5/25 0829					
Parameter	pH		Conductivity	Redox	Dissolved Oxygen
Standard Concentration	6.8-7.2		7630-8010	212-242	
Temperature	25.2		25.2	25.2	
Reading	7.04		7435 µS/cm	223.8	

Date & Time:					
Parameter	pH		Conductivity	Redox	Dissolved Oxygen
Standard Concentration					
Temperature					
Reading					

Date & Time:					
Parameter	pH		Conductivity	Redox	Dissolved Oxygen
Standard Concentration					
Temperature					
Reading					

[redacted]

AECOM

EQUIPMENT CALIBRATION FORM

Technician [redacted]

Date & Time: 7/5/25 0839

INSTRUMENT IDENTIFICATION

Model Number:

Serial Number:

Instrument Type:

INSPECTION RECORD (YES/NO):

Batteries Checked: Y

Membrane Cap/Electrolyte Replacement Required? N

Electrodes Cleaned/Checked: Y

CALIBRATION DETAILS:

	Calibration Solution	Standard Value	Reading Before Cal		Reading After Cal		Acceptable pH mV in buffer
			pH	pH mV	pH	pH mV	
pH (calibrate before redox) 25.5°C	Buffer 7.00	7.00 pH	7.04	-6.8	7.00		0 mV + 50 mV
	Buffer 4.00	4.00 pH	4.05	167.7	4.00		+165 to +180 from 7 buffer mV value
	Buffer 10.01	10.01 pH					-165 to -180 from 7 buffer mV value
pH slope in GLP record after calibration:							Acceptable = 55 to 60 pH/mV (Ideal is 59.16 mV/pH)

	Calibration Solution	Standard Value	Reading Before Cal	Reading After Cal	
Dissolved Oxygen	Air		99.8 %	100 %	
	Zero Dissolved Oxygen		%	%	
DO sensor value @ = 25 °C in 100% saturated air:					Average 6.15 uA (min. 4.31 uA, max. 8.00 uA)

	Calibration Solution	Standard Value	Reading Before Cal	Reading After Cal	
Redox	Zobell's Solution	231.2 mV @ 25.6 °C	235.4	231.0	
ORP Cal Offset in GLP record after cal:					Acceptable = -100 to 50

	Calibration Solution	Standard Value	Reading Before Cal	Reading After Cal	
Conductivtiy (Specific)	1413 us/cm	1413 us/cm	1404	1413	
Conductivity cell constant:					Acceptable range is 4.0 - 6.0

AECOM

EQUIPMENT BUMP TEST FORM

Technician: [redacted]

Date & Time: 30/04/25

INSTRUMENT IDENTIFICATION

Model Number: YSI

Serial Number: 12D10A38

Instrument Type: YSI PRO

INSPECTION RECORD (YES/NO):

Batteries Checked: Yes.

Membrane Cap/Electrolyte Replacement Required? No

Electrodes Cleaned/Checked: Yes

BUMP TEST DETAILS:

Date & Time: 30/04/25 @ 16:00

Parameter	pH		Conductivity	Redox	Dissolved Oxygen
Standard Concentration	4.0	7.0	1,413	253 @ 25°C	100%
Temperature	4.02	7.00	1,420	27°C	103%
Reading	27.0°C	27.1	27.1	262.3	—

Date & Time: 02/05/25

Parameter	pH		Conductivity	Redox	Dissolved Oxygen
Standard Concentration	6.8-7.2	/	7,690-8,080	204-234	100%
Temperature	26.7	/	27.0	26.9	24.8
Reading	6.9	/	7,829	221.2	102%

Date & Time: 06-05-25 7:20 AM

Parameter	pH		Conductivity	Redox	Dissolved Oxygen
Standard Concentration	6.8-7.0	/	7,933	204-234 ~~145.6~~	100%
Temperature	27.0	/	7,690-8080	26.8	24.3
Reading	7.02	/	26.9°C	230.9	99.8%

[redacted]

AECOM

EQUIPMENT CALIBRATION FORM

Technician: [redacted]

Date & Time: 07-05-25

INSTRUMENT IDENTIFICATION

Model Number: Pro Plus

Serial Number: 12D101138

Instrument Type: YSI Pro Series

INSPECTION RECORD (YES/NO):

Batteries Checked: ✓

Membrane Cap/Electrolyte Replacement Required? ✓

Electrodes Cleaned/Checked: ✓

CALIBRATION DETAILS:

	Calibration Solution	Standard Value	Reading Before Cal		Reading After Cal		Acceptable pH mV in buffer
			pH	pH mV	pH	pH mV	
pH (calibrate before redox)	Buffer 7.00	7.00 pH	7.02	221.3	✓	✓	0 mV + 50 mV
	Buffer 4.00	4.00 pH	4.03	219.3	✓	✓	+165 to +180 from 7 buffer mV value
	Buffer 10.01	10.01 pH	✓	✓	✓	✓	-165 to -180 from 7 buffer mV value
pH slope in GLP record after calibration:							Acceptable = 55 to 60 pH/mV (Ideal is 59.16 mV/pH)

	Calibration Solution	Standard Value	Reading Before Cal	Reading After Cal	
Dissolved Oxygen	Air	100%	98.2 %	✓ %	
	Zero Dissolved Oxygen	✓	✓ %	✓ %	
DO sensor value @ ≈ 25 °C in 100% saturated air:					Average 6.15 uA (min. 4.31 uA, max. 8.00 uA)

	Calibration Solution	Standard Value	Reading Before Cal	Reading After Cal	
Redox	Zobell's Solution	212-247 mV @ 20-25 °C	158.7	232.4	
ORP Cal Offset in GLP record after cal:					Acceptable = -100 to 50

	Calibration Solution	Standard Value	Reading Before Cal	Reading After Cal	
Conductivtiy (Specific)	12,880	✓	13,210	12,879	
	✓	✓	✓	✓	
Conductivity cell constant:					Acceptable range is 4.0 - 6.0

AECOM

EQUIPMENT BUMP TEST FORM

Technician [redacted]

Date & Time:

INSTRUMENT IDENTIFICATION

Model Number: 605596

Serial Number: 12D101138

Instrument Type: YSI Professional plus

INSPECTION RECORD (YES/NO):

Batteries Checked: Y

Membrane Cap/Electrolyte Replacement Required? N

Electrodes Cleaned/Checked: Y

BUMP TEST DETAILS:

Date & Time: 18/03/25

Parameter	pH		Conductivity	Redox	Dissolved Oxygen
Standard Concentration	4.0	7.0	1413 µs/cm	230.3	100%
Temperature	26.00	26.23		26.29	
Reading	4.0	7.0	1412 µs/cm	230.0	104.3

Date & Time: 19/03/25

Parameter	pH		Conductivity	Redox	Dissolved Oxygen
Standard Concentration	4.0	7.0	12.88 ms/cm	229.1 mV	100%
Temperature				27.2	~~NA~~
Reading	4.0	7.01	12.85 ms/cm	229.6	101%

Date & Time: 20/03/25

Parameter	pH		Conductivity	Redox	Dissolved Oxygen
Standard Concentration	4.0	7.0	1413 µs/cm	226.41	100%
Temperature			~~NA~~	29.3	
Reading	4.02	7.0	1410 µs/cm	205.8	99.8%

recalibrated:
226.4 after cal

[redacted]

AECOM

EQUIPMENT CALIBRATION FORM

Technician [redacted]

Date & Time: 17/03/25

INSTRUMENT IDENTIFICATION

Model Number: 605596

Serial Number: 12D101138

Instrument Type: YSI Professional Plus

INSPECTION RECORD (YES/NO):

Batteries Checked: Y

Membrane Cap/Electrolyte Replacement Required? fresh gel

Electrodes Cleaned/Checked: Y

CALIBRATION DETAILS:

	Calibration Solution	Standard Value	Reading Before Cal		Reading After Cal		Acceptable pH mV in buffer
			pH	pH mV	pH	pH mV	
pH (calibrate before redox)	Buffer 7.00	7.00 pH			7.00	1.20	0 mV + 50 mV
	Buffer 4.00	4.00 pH			4.00	177.12	+165 to +180 from 7 buffer mV value
NR	~~Buffer 10.01~~	~~10.01 pH~~					-165 to -180 from 7 buffer mV value
pH slope in GLP record after calibration:		58.67 mv/pH					Acceptable = 55 to 60 pH/mV (ideal is 59.16 mV/pH)

	Calibration Solution	Standard Value	Reading Before Cal	Reading After Cal	
Dissolved Oxygen	Air	100%	104.3 %	100 %	
NR	~~Zero Dissolved Oxygen~~		%	%	
DO sensor value @ ≈ 25 °C in 100% saturated air:					Average 6.15 uA (min. 4.31 uA, max. 8.00 uA)

	Calibration Solution	Standard Value	Reading Before Cal	Reading After Cal	
Redox	Zobell's Solution	229 mV @ 17.29 °C	247.00	229.3	
ORP Cal Offset in GLP record after cal:		2.99			Acceptable = -100 to 50

	Calibration Solution	Standard Value	Reading Before Cal	Reading After Cal	
Conductivtiy (Specific)	12.88 ms/cm	12.88 ms/cm	10.35 ms/cm	12880 us/cm	
NR					
Conductivity cell constant:					Acceptable range is 4.0 - 6.0

NR = Not required

AECOM Imagine it. Delivered.

[redacted]

Equipment Information

Instrument: YSI B

Serial Number: 199102635

Equipment check

	Enclosed	Comment
YSI Pro Plus Display	✓	
YSI Quatro Sonde	✓	
- YSI 1001 pH Probe	✓	
- YSI 1002 ORP Probe	✓	
- YSI 5560 Cond/Temp Probe	✓	
Flow Cell and Attachments (x2)	✓	
Probe Guard	✓	
Rubber Storage/Calibration Sleeve	✓	
Calibration Cup + Cap	✓	
YSI Cable Management Kit	✓	
YSI Pro Series ProComm II Kit	✓	
User Manual + Flow Cell Manual	✓	
Spare Batteries (x2) & Screwdriver	✓	
Laminated Quick Start Guide	✓	

Sensor Calibration Details

	Calibration Undertaken	Accuracy	Pass	Fail
Temperature	Factory Calibrated	±0.2 °C		
Dissolved oxygen	100% Saturation 97.6	±2%		
	Pressure Compensation	____hPa		
Conductivity	12.88mS/cm	±0.5%		
	Checl linearity at	±0.5%	✓	
	1398 1.413mS/cm	1413 ✓		
Salinity	Auto Calibrated	±1%		
pH	pH 7.00 7.03	±0.2 ✓		
	pH 4.01 3.97	±0.2 ✓		
	pH 10.01 9.93	±0.2 ✓		
ORP	____mV at ____ °C	±20mV		

ORP not calibrated as I forgot to pack Solution.

This is to certify that where possible, this instrument has been calibrated in accordance with the manufacturers calibration procedure as recommended in the instrument service manual

Name: [redacted]

Signatu [redacted]

Date: 1-4-25

Appendix E

Data Validation Reports

AECOM

DATA VALIDATION REPORT – WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801 – PFASOMP	**Date:**	06/02/2025
Site:	0990 – RAAF Base Tindal		
Matrix:	Water	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney & NMI Sydney (Secondary laboratory)	**Date:**	03/03/2025
Lab reference:	ES2504689, RN1454300* (*Secondary laboratory)		

Key Findings:

The surface water and sediment analytical data can be used as a basis for interpretation, subject to the limitations outlined below:

- The potential exists for concentrations of PFOS to be below the LOR, but above the PFAS Freshwater 99% Species Protection guideline in 9 of 25 primary samples

Component		Outliers			Material impact on interpretation
		No	Yes	Comment	
Frequency of field quality assurance/quality control (QAQC)		✓			No
Number of tests requested/reported		✓			No
Sample handling/preservation/holding times			✓	1	No
Frequency of laboratory QA/QC			✓	2	No
Limits of reporting (LOR)			✓	3	No
Blank analysis	Field blank	✓			No
	Rinsate blank	✓			No
	Trip blank	✓			No
	Method blank	✓			No
Field inter- and intra-laboratory relative percent differences (RPDs)			✓	4	No
Laboratory duplicate RPDs		✓			No
Matrix spike (MS) % recoveries		✓			No
Laboratory control spike (LCS) % recoveries		✓			No
Surrogate % recoveries		✓			No
Other observations		✓			No

Comments	
1. Sample handling/preservation/ holding times	Laboratory batches were received above of the APHA/NEPM recommended temperature range (≤6°C) for the water samples: Batch Number: ES2504689 Temperature (°C): 5.8°C, 12.9°C and 11.8°C The potential for under reporting is not considered to materially affect the interpretation of results as PFAS compounds are not affected by volatilisation. Further, the samples were received below the ambient groundwater and surface water temperature at the time of sampling (~30 °C) and the samples were immediately cooled upon collection. Primary samples showed good reproducibility with the secondary laboratory results.
2. Frequency of Laboratory QA/QC	Matrix spikes were not reported at the required frequency for PFAS in primary lab batch ES2504689 (4.26/5.00%). The accuracy of the data can be assessed as acceptable based on method blanks, LCS and surrogate spike recoveries (which were reported at the required frequencies and within control limits), and available matrix spike recoveries for the same analytical method group (which were reported within control limits).
3. Limits of Reporting (LOR)	Limits of reporting (LOR) were sufficiently low to enable assessment against adopted guideline criteria, with the exception of PFOS in water. The potential exists for PFOS to be above the adopted PFAS Freshwater 99% Species Protection guideline (0.00023 µg/L), but below the laboratory LOR (0.01 µg/L) in all groundwater primary samples collected for the following samples that have reported above the LOR and the guideline value: • 0990_OTH118_250217 • 0990_POT113_250217 • 0990_POT114_250217 • 0990_POT126_250217 • 0990_POT127_250217 • 0990_POT130_250217 • 0990_POT131_250217 • 0990_POT198_250217 • 0990_POT201_250217 This should be taken into consideration when interpreting PFOS results against guidelines where results are reported below the LOR.
4. Field intra-laboratory relative percent differences (RPDs)	Field intra-laboratory RPDs were reported within control limits, except of the following sample (higher concentration in **bold**): • 0990_POT125_250113 & **0990_QC100_250113** for PFOS (100%) and PFHxS (67%). As concentrations of PFOS and PFHxS are less than 10 x LOR, where precision is low and actual differences minor, the data is considered to be of an acceptable precision and these elevated RPDs are not considered to affect the interpretation of results against guidelines.

Data Validation Report
QA/QC Blanks
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

QA/QC Blanks

				Per- and Poly-fluoroalkyl Substances																											
				Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonate (PFOS)	Perfluorohexane sulfonate (PFHxS)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR				0.01	0.01	0.01	0.05	0.05	0.05	0.05	0.02	0.02	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.1	0.05	0.05	0.05	0.05	0.02	0.02	0.02
Date	**Field ID**	**Sample Type**	**Lab Report Number**																												
17 Feb 2025	**0990_QC300_250217**	**Rinsate**	**ES2504689**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	0990_QC301_250217	**Rinsate**	**ES2504689**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	0990_QC400_250217	**Field Blank**	**ES2504689**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	0990_QC401_250217	**Field Blank**	**ES2504689**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02
	0990_QC500_250217	**Trip Blank**	**ES2504689**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02

Data Validation Report
Field RPDs
PFAS Ongoig Monitoring Plan
Department of Defence - RAAF Base Tindal

Relative Percentage Differences

		Date	17 Feb 2025	17 Feb 2025		17 Feb 2025	17 Feb 2025		17 Feb 2025	17 Feb 2025	
		Field ID	0990_OTH119_250217	0990_QC101_250217		0990_OTH119_250217	0990_QC201_250217		0990_POT113_250217	0990_QC100_250217	
		Sample Type	Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate		Primary	Intra-lab Duplicate	
		Lab Report Number	ES2504689	ES2504689	RPD	ES2504689	RN1456997	RPD	ES2504689	ES2504689	RPD
Analyte	**Unit**	**LOR**									
Per- and Poly-fluoroalkyl Substances											
Perfluorooctanoic Acid (PFOA)	µg/L	0.002	0.003	<0.01	0	0.003	<0.01	0	<0.01	<0.01	0
Perfluorooctane sulfonate (PFOS)	µg/L	0.002	0.013	<0.01	26	0.013	<0.02	0	<0.01	0.03	**100**
Perfluorohexane sulfonate (PFHxS)	µg/L	0.002	0.004	<0.01	0	0.004	<0.01	0	<0.01	0.02	**67**
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.01	0	<0.05	<0.05	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.01	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.01	0	<0.05	<0.05	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.01	0	<0.05	<0.05	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.02	0	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.02	0	<0.05	<0.05	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.02	0	<0.02	<0.02	0
Perfluorooctadecanoic Acid (PFODA)	µg/L		-	-	-	-	<0.05	-	-	-	-
Perfluorononanoic acid (PFNA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0
Perfluorononanesulfonic acid (PFNS)	µg/L		-	-	-	-	<0.01	-	-	-	-
Perfluorohexadecanoic acid (PFHxDA)	µg/L	0.005	<0.005	-	-	<0.005	<0.02	0	-	-	-
Perfluorohexanoic acid (PFHxA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0
Perfluorodecanoic acid (PFDA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0
Perfluorobutanoic acid (PFBA)	µg/L	0.01	<0.01	<0.1	0	<0.01	<0.05	0	<0.1	<0.1	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.02	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.02	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0

***RPDs have only been considered where a concentration is greater than 1 times the LOR.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 30 (1 - 10 x LOR); 30 (10 - 30 x LOR); 30 (> 30 x LOR))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

Data Validation Report
Field RPDs
PFAS Ongoig Monitoring Plan
Department of Defence - RAAF Base Tindal

Relative Percentage Differences

		Date	17 Feb 2025	17 Feb 2025		17 Feb 2025	17 Feb 2025		17 Feb 2025	17 Feb 2025		17 Feb 2025	17 Feb 2025		17 Feb 2025	17 Feb 2025
		Field ID	0990_OTH119_250217	0990_QC101_250217		0990_OTH119_250217	0990_QC201_250217		0990_POT113_250217	0990_QC100_250217		0990_POT113_250217	0990_QC200_250217		0990_POT127_250217	0990_QC102_250217
		Sample Type	Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate		Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate		Primary	Intra-lab Duplicate
		Lab Report Number	ES2504689	ES2504689	RPD	ES2504689	RN1456997	RPD	ES2504689	ES2504689	RPD	ES2504689	RN1456997	RPD	ES2504689	ES2504689
Analyte	**Unit**	**LOR**														
Per- and Poly-fluoroalkyl Substances																
Perfluorooctanoic Acid (PFOA)	µg/L	0.002	0.003	<0.01	0	0.003	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.002	<0.01
Perfluorooctane sulfonate (PFOS)	µg/L	0.002	0.013	<0.01	26	0.013	<0.02	0	<0.01	0.03	**100**	<0.01	<0.02	0	<0.002	<0.01
Perfluorohexane sulfonate (PFHxS)	µg/L	0.002	0.004	<0.01	0	0.004	<0.01	0	<0.01	0.02	**67**	<0.01	<0.01	0	<0.002	<0.01
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.005	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.005	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.005	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.005	<0.05
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.02
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.002	<0.02
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.02	0	<0.05	<0.05	0	<0.05	<0.02	0	<0.005	<0.05
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.02
Perfluoropentanoic acid (PFPeA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.002	<0.02
Perfluorooctadecanoic Acid (PFODA)	µg/L		-	-	-	-	<0.05	-	-	-	-	-	<0.05	-	-	-
Perfluorononanoic acid (PFNA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.02
Perfluorononanesulfonic acid (PFNS)	µg/L		-	-	-	-	<0.01	-	-	-	-	-	<0.01	-	-	-
Perfluorohexadecanoic acid (PFHxDA)	µg/L	0.005	<0.005	-	-	<0.005	<0.02	0	-	-	-	-	<0.02	-	<0.005	-
Perfluorohexanoic acid (PFHxA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.02
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.02
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	0.01	<0.01	<0.1	0	<0.01	<0.05	0	<0.1	<0.1	0	<0.1	<0.05	0	<0.01	<0.1
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.02	0	<0.05	<0.05	0	<0.05	<0.02	0	<0.005	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.005	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.02	0	<0.05	<0.05	0	<0.05	<0.02	0	<0.005	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.005	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.02
Perfluorooctane sulfonamide (FOSA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.02

***RPDs have only been considered where a concentration is greater than 1 times the LOR.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 30 (1 - 10 x LOR); 30 (10 - 30 x LOR); 30 (> 30 x LOR))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

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Field RPDs
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Relative Percentage Differences

		Date	17 Feb 2025	17 Feb 2025		17 Feb 2025	17 Feb 2025		17 Feb 2025	17 Feb 2025			17 Feb 2025	18 Feb 2025	
		Field ID	0990_OTH119_250217	0990_QC101_250217		0990_OTH119_250217	0990_QC201_250217		0990_POT113_250217	0990_QC100_250217			0990_POT127_250217	0990_QC202_250218	
		Sample Type	Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate		Primary	Intra-lab Duplicate			Primary	Inter-lab Duplicate	
		Lab Report Number	ES2504689	ES2504689	RPD	ES2504689	RN1456997	RPD	ES2504689	ES2504689	RPD	RPD	ES2504689	RN1456997	RPD
Analyte	**Unit**	**LOR**													
Per- and Poly-fluoroalkyl Substances															
Perfluorooctanoic Acid (PFOA)	µg/L	0.002	0.003	<0.01	0	0.003	<0.01	0	<0.01	<0.01	0	0	<0.002	<0.01	0
Perfluorooctane sulfonate (PFOS)	µg/L	0.002	0.013	<0.01	26	0.013	<0.02	0	<0.01	0.03	**100**	0	<0.002	<0.02	0
Perfluorohexane sulfonate (PFHxS)	µg/L	0.002	0.004	<0.01	0	0.004	<0.01	0	<0.01	0.02	**67**	0	<0.002	<0.01	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.01	0	<0.05	<0.05	0	0	<0.005	<0.01	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.01	0	<0.05	<0.05	0	0	<0.005	<0.01	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.01	0	<0.05	<0.05	0	0	<0.005	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.01	0	<0.05	<0.05	0	0	<0.005	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	0	<0.002	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.02	0	<0.02	<0.02	0	0	<0.002	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.02	0	<0.05	<0.05	0	0	<0.005	<0.02	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	0	<0.002	<0.01	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.02	0	<0.02	<0.02	0	0	<0.002	<0.02	0
Perfluorooctadecanoic Acid (PFODA)	µg/L		-	-	-	-	<0.05	-	-	-	-	-	-	<0.05	-
Perfluorononanoic acid (PFNA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	0	<0.002	<0.01	0
Perfluorononanesulfonic acid (PFNS)	µg/L		-	-	-	-	<0.01	-	-	-	-	-	-	<0.01	-
Perfluorohexadecanoic acid (PFHxDA)	µg/L	0.005	<0.005	-	-	<0.005	<0.02	0	-	-	-	-	<0.005	<0.02	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	0	<0.002	<0.01	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	0	<0.002	<0.01	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	0	<0.002	<0.01	0
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	0	<0.002	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	0	<0.002	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	0	<0.002	<0.01	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	0	<0.002	<0.01	0
Perfluorobutanoic acid (PFBA)	µg/L	0.01	<0.01	<0.1	0	<0.01	<0.05	0	<0.1	<0.1	0	0	<0.01	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.02	0	<0.05	<0.05	0	0	<0.005	<0.02	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.05	0	<0.05	<0.05	0	0	<0.005	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.02	0	<0.05	<0.05	0	0	<0.005	<0.02	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.05	0	<0.05	<0.05	0	0	<0.005	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	0	<0.002	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	0	<0.002	<0.01	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.02	<0.02	0	0	<0.002	<0.01	0

***RPDs have only been considered where a concentration is greater than 1 times the LOR.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 30 (1 - 10 x LOR); 30 (10 - 30 x LOR); 30 (> 30 x LOR))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

AECOM

DATA VALIDATION REPORT; GROUNDWATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801	**Date:**	09/04/2025
Site:	0990		
Matrix:	Water	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney, NMI	**Date:**	11/04/2025
Lab reference:	ES2508368, ES2508367, ES2508369, RN1460704, RN1460699		

Key Findings:

The water analytical data can be used as a basis for interpretation, subject to the limitations outlined below:

- The potential exists for concentrations of PFOS to be below the LOR, but above the PFAS Freshwater 99% Species Protection guideline in 16 of 29 primary samples

Laboratory reports assessed as part of this Data Validation Report include the Cossack investigative sampling that is outside of the OMP SAQP. Lab reports and field duplicate parent samples may reflect these sample IDs. As the sampling was conducted in the same event and still under the ongoing monitoring program, the data has been assessed for validation altogether.

Component		Outliers			Material impact on interpretation
		No	Yes	Comment	
Frequency of field quality assurance/quality control (QAQC)			✓	1	No
Number of tests requested/reported		✓			No
Sample handling/preservation/holding times			✓	2	No
Frequency of laboratory QA/QC			✓	3	No
Limits of reporting (LOR)			✓	4	No
Blank analysis	Field blank	✓			No
	Rinsate blank	✓			No
	Trip blank	✓			No
	Method blank	✓			No
Field intra-laboratory relative percent differences (RPDs)		✓			No
Field inter-laboratory RPDs		✓			No
Laboratory duplicate RPDs		✓			No
Matrix spike (MS) % recoveries		✓			No
Laboratory control spike (LCS) % recoveries		✓			No
Surrogate % recoveries		✓			No
Other observations		✓			No

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Comments	
1. Frequency of field QAQC	As per project specifications, field rinsates were not collected on the 17 and 18 March 2024 due to the type of sampling (grab sampling for private property bores) not requiring re-useable equipment.
2. Sample handling/preservation/ holding times	**Sample Preservation** Samples were received at the laboratory outside of the NEPM (NEPC, 2013) recommended temperature (<6°C) for the following batches:

Laboratory Batch	Average Temperature (°C)
ES2508367	21.9
ES2508368	21.9
ES2508369	21.5
RN1460699	Chilled
RN1460704	Chilled

Due to the nature of PFAS not being volatile and degradation of PFAS requiring extreme temperatures (>400 °C), the elevated temperatures are not expected to affect the accuracy of results.

3. Frequency of Laboratory QA/QC	Laboratory duplicate samples were not reported for ES2508368 and ES250869 at the required frequency. The precision of the data can be assessed as acceptable based on the available laboratory duplicates and intra- and inter-field duplicate RPDs which were reported at the required frequencies and generally within control limits. Matrix spikes were not reported at the required frequencies for ES2508368 and ES250869. The accuracy of the data can be assessed as acceptable based on method blanks, LCS and surrogate spike recoveries (which were reported above the required frequencies and within control limits).
4. Limits of reporting	Limits of reporting (LOR) were sufficiently low to enable assessment against adopted guideline criteria, with the exception of PFOS in water. The potential exists for PFOS to be above the adopted PFAS Freshwater 99% Species Protection guideline (0.00023 µg/L), but below the laboratory LOR (0.002 µg/L) for the following primary samples: • 0990_POT125_250317 • 0990_POT128_250317 • 0990_MW808_250320 • 0990_MW809_250320 • 0990_MW812_250320 • 0990_OTH118_250318 • 0990_POT126_250317 • 0990_POT127_250318 • 0990_POT130_250318 • 0990_POT131_250317 • 0990_POT198_250318 • 0990_POT201_250318 • 0990_SW100_250319 • 0990_SW108_250319 • 0990_SW110_250319 • 0990_SW161_250319 This is to be taken into consideration when interpreting PFOS results against guidelines where results are reported below the LOR.

Data Validation Report
QA/QC Blanks
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

QA/QC Blanks

				Per- and Poly-fluoroalkyl Substances																													
				Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonate (PFOS)	Perfluorohexane sulfonate (PFHxS)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	Sum of PFHxS and PFOS	Sum of PFAS
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR				0.01	0.01	0.01	0.05	0.05	0.05	0.05	0.02	0.02	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.1	0.05	0.05	0.05	0.05	0.02	0.02	0.02	0.01	0.01
Date	**Field ID**	**Sample Type**	**Lab Report Number**																														
17 Mar 2025	**0990_QC400_250317**	**Field Blank**	**ES2508369**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
18 Mar 2025	**0990_QC400_250318**	**Field Blank**	**ES2508369**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
	0990_QC500_250318	**Trip Blank**	**ES2508369**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
19 Mar 2025	**0990_QC300_250319**	**Rinsate**	**ES2508367**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
	0990_QC400_250319	**Field Blank**	**ES2508367**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
	0990_QC500_250319	**Trip Blank**	**ES2508367**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
20 Mar 2025	**0990_QC300_250320**	**Rinsate**	**ES2508367**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
	0990_QC400_250320	**Field Blank**	**ES2508367**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01

Data Validation Report
Relative Percentage Difference
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Relative Percentage Differences

		Date	17 Mar 2025			17 Mar 2025			17 Mar 2025			17 Mar 2025		
		Field ID	0990_POT113_250317	0990_QC101_250317		0990_POT113_250317	0990_QC201_250317		0990_POT128_250317	0990_QC100_250317		0990_POT128_250317	0990_QC200_250317	
		Sample Type	Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate		Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate	
		Lab Report Number	ES2508368	ES2508369	RPD	ES2508368	RN1460704	RPD	ES2508368	ES2508369	RPD	ES2508368	RN1460704	RPD
Analyte	**Unit**	**LOR**												
Per- and Poly-fluoroalkyl Substances														
Perfluorooctanoic Acid (PFOA)	µg/L	0.002	<0.01	0.01	0	<0.01	0.014	33	<0.002	<0.002	0	<0.002	<0.01	0
Perfluorooctane sulfonate (PFOS)	µg/L	0.002	0.23	0.26	12	0.23	0.23	0	<0.002	<0.002	0	<0.002	<0.02	0
Perfluorohexane sulfonate (PFHxS)	µg/L	0.002	0.15	0.17	13	0.15	0.20	29	<0.002	<0.002	0	<0.002	<0.01	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.01	0	<0.005	<0.005	0	<0.005	<0.01	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.01	0	<0.005	<0.005	0	<0.005	<0.01	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.01	0	<0.005	<0.005	0	<0.005	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.01	0	<0.005	<0.005	0	<0.005	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.002	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.002	<0.002	0	<0.002	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.02	0	<0.005	<0.005	0	<0.005	<0.02	0
Perfluoropropanesulfonic acid (PFPrS)	µg/L	0.02	<0.02	-	-	<0.02	-	-	-	-	-	-	-	-
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.002	0.02	0.03	40	0.02	0.035	55	<0.002	<0.002	0	<0.002	<0.01	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.002	<0.002	0	<0.002	<0.02	0
Perfluorooctadecanoic Acid (PFODA)	µg/L	0.05	-	-	-	-	<0.05	-	-	-	-	-	<0.05	-
Perfluorononanoic acid (PFNA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.002	<0.01	0
Perfluorononanesulfonic acid (PFNS)	µg/L	0.01	<0.02	-	-	<0.02	<0.01	0	-	-	-	-	<0.01	-
Perfluorohexadecanoic acid (PFHxDA)	µg/L	0.005	-	-	-	-	<0.02	-	<0.005	<0.005	0	<0.005	<0.02	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.002	0.04	0.06	40	0.04	0.061	42	<0.002	<0.002	0	<0.002	<0.01	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.002	<0.01	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.002	<0.01	0
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.002	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.002	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.002	<0.01	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.002	0.02	0.03	40	0.02	0.034	52	<0.002	<0.002	0	<0.002	<0.01	0
Perfluorobutanoic acid (PFBA)	µg/L	0.01	<0.1	<0.1	0	<0.1	<0.05	0	<0.01	<0.01	0	<0.01	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.02	0	<0.005	<0.005	0	<0.005	<0.02	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.005	<0.005	0	<0.005	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.02	0	<0.005	<0.005	0	<0.005	<0.02	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.005	<0.005	0	<0.005	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.002	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.002	<0.01	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.002	<0.01	0

***RPDs have only been considered where a concentration is greater than 1 times the LOR.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each LOR multiplier range are: 81 (1 - 10 x LOR); 50 (10 - 30 x LOR); 30 (> 30 x LOR))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

Data Validation Report
Relative Percentage Difference
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Relative Percentage Differences

		Date	17 Mar 2025			17 Mar 2025			17 Mar 2025			19 Mar 2025			19 Mar 2025		
		Field ID	0990_POT113_250317	0990_QC101_250317		0990_POT113_250317	0990_QC201_250317		0990_POT128_250317	0990_QC100_250317		0990_SW110_250319	0990_QC100_250319		0990_SW110_250319	0990_QC200_250319	
		Sample Type	Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate		Primary	Intra-lab Duplicate		Water	Water		Water	Water	
		Lab Report Number	ES2508368	ES2508369	RPD	ES2508368	RN1460704	RPD	ES2508368	ES2508369	RPD	ES2508367	ES2508367	RPD	ES2508367	RN1460699	RPD
Analyte	**Unit**	**LOR**															
Per- and Poly-fluoroalkyl Substances																	
Perfluorooctanoic Acid (PFOA)	µg/L	0.002	<0.01	0.01	0	<0.01	0.014	33	<0.002	<0.002	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorooctane sulfonate (PFOS)	µg/L	0.002	0.23	0.26	12	0.23	0.23	0	<0.002	<0.002	0	<0.01	<0.01	0	<0.01	<0.02	0
Perfluorohexane sulfonate (PFHxS)	µg/L	0.002	0.15	0.17	13	0.15	0.20	29	<0.002	<0.002	0	<0.01	<0.01	0	<0.01	<0.01	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.01	0	<0.005	<0.005	0	<0.05	<0.05	0	<0.05	<0.01	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.01	0	<0.005	<0.005	0	<0.05	<0.05	0	<0.05	<0.01	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.01	0	<0.005	<0.005	0	<0.05	<0.05	0	<0.05	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.01	0	<0.005	<0.005	0	<0.05	<0.05	0	<0.05	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.02	0	<0.005	<0.005	0	<0.05	<0.05	0	<0.05	<0.02	0
Perfluoropropanesulfonic acid (PFPrS)	µg/L	0.02	<0.02	-	-	<0.02	-	-	-	-	-	-	-	-	-	-	-
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.002	0.02	0.03	40	0.02	0.035	55	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorooctadecanoic Acid (PFODA)	µg/L	0.05	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	<0.05	-
Perfluorononanoic acid (PFNA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorononanesulfonic acid (PFNS)	µg/L	0.01	<0.02	-	-	<0.02	<0.01	0	-	-	-	-	-	-	-	<0.01	-
Perfluorohexadecanoic acid (PFHxDA)	µg/L	0.005	-	-	-	-	<0.02	-	<0.005	<0.005	0	-	-	-	-	<0.02	-
Perfluorohexanoic acid (PFHxA)	µg/L	0.002	0.04	0.06	40	0.04	0.061	42	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.002	0.02	0.03	40	0.02	0.034	52	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorobutanoic acid (PFBA)	µg/L	0.01	<0.1	<0.1	0	<0.1	<0.05	0	<0.01	<0.01	0	<0.1	<0.1	0	<0.1	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.02	0	<0.005	<0.005	0	<0.05	<0.05	0	<0.05	<0.02	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.005	<0.005	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.02	0	<0.005	<0.005	0	<0.05	<0.05	0	<0.05	<0.02	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.005	<0.005	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01	0

***RPDs have only been considered where a concentration is greater than 1 times the LOR.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each LOR multiplier range are: 81 (1 - 10 x LOR); 50 (10 - 30 x LOR); 30 (> 30 x LOR))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

Data Validation Report
Relative Percentage Difference
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Relative Percentage Differences

		Date	17 Mar 2025			17 Mar 2025			17 Mar 2025			20 Mar 2025			20 Mar 2025	
		Field ID	0990_POT113_250317	0990_QC101_250317		0990_POT113_250317	0990_QC201_250317		0990_POT128_250317	0990_QC100_250317		0990_MW810_250320	0990_QC100_250320		0990_MW810_250320	0990_QC200_250320
		Sample Type	Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate		Primary	Intra-lab Duplicate		Water	Water		Water	Water
		Lab Report Number	ES2508368	ES2508369	RPD	ES2508368	RN1460704	RPD	ES2508368	ES2508369	RPD	ES2508367	ES2508367	RPD	ES2508367	RN1460699
Analyte	**Unit**	**LOR**														
Per- and Poly-fluoroalkyl Substances																
Perfluorooctanoic Acid (PFOA)	µg/L	0.002	<0.01	0.01	0	<0.01	0.014	33	<0.002	<0.002	0	<0.01	<0.01	0	<0.01	<0.01
Perfluorooctane sulfonate (PFOS)	µg/L	0.002	0.23	0.26	12	0.23	0.23	0	<0.002	<0.002	0	0.05	0.06	18	0.05	0.054
Perfluorohexane sulfonate (PFHxS)	µg/L	0.002	0.15	0.17	13	0.15	0.20	29	<0.002	<0.002	0	0.09	0.09	0	0.09	0.10
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.01	0	<0.005	<0.005	0	<0.05	<0.05	0	<0.05	<0.01
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.01	0	<0.005	<0.005	0	<0.05	<0.05	0	<0.05	<0.01
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.01	0	<0.005	<0.005	0	<0.05	<0.05	0	<0.05	<0.01
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.01	0	<0.005	<0.005	0	<0.05	<0.05	0	<0.05	<0.01
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.02	0	<0.005	<0.005	0	<0.05	<0.05	0	<0.05	<0.02
Perfluoropropanesulfonic acid (PFPrS)	µg/L	0.02	<0.02	-	-	<0.02	-	-	-	-	-	-	-	-	-	-
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.002	0.02	0.03	40	0.02	0.035	55	<0.002	<0.002	0	0.02	0.03	40	0.02	0.033
Perfluoropentanoic acid (PFPeA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.002	<0.002	0	0.02	0.02	0	0.02	<0.02
Perfluorooctadecanoic Acid (PFODA)	µg/L	0.05	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	<0.05
Perfluorononanoic acid (PFNA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01
Perfluorononanesulfonic acid (PFNS)	µg/L	0.01	<0.02	-	-	<0.02	<0.01	0	-	-	-	-	-	-	-	<0.01
Perfluorohexadecanoic acid (PFHxDA)	µg/L	0.005	-	-	-	-	<0.02	-	<0.005	<0.005	0	-	-	-	-	<0.02
Perfluorohexanoic acid (PFHxA)	µg/L	0.002	0.04	0.06	40	0.04	0.061	42	<0.002	<0.002	0	0.07	0.08	13	0.07	0.068
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01
Perfluoroheptanoic acid (PFHpA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01
Perfluorododecanoic acid (PFDoDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01
Perfluorodecanoic acid (PFDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.002	0.02	0.03	40	0.02	0.034	52	<0.002	<0.002	0	0.04	0.04	0	0.04	0.034
Perfluorobutanoic acid (PFBA)	µg/L	0.01	<0.1	<0.1	0	<0.1	<0.05	0	<0.01	<0.01	0	<0.1	<0.1	0	<0.1	<0.05
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.02	0	<0.005	<0.005	0	<0.05	<0.05	0	<0.05	<0.02
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.005	<0.005	0	<0.05	<0.05	0	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.02	0	<0.005	<0.005	0	<0.05	<0.05	0	<0.05	<0.02
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.005	<0.005	0	<0.05	<0.05	0	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01
Perfluorooctane sulfonamide (FOSA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.002	0	<0.02	<0.02	0	<0.02	<0.01

***RPDs have only been considered where a concentration is greater than 1 times the LOR.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each LOR multiplier range are: 81 (1 - 10 x LOR); 50 (10 - 30 x LOR); 30 (> 30 x LOR))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

AECOM

DATA VALIDATION REPORT – WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801 – PFASOMP	**Date:**	30/04/2025
Site:	0990 – RAAF Base Tindal		
Matrix:	Water	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney & NMI Sydney (Secondary laboratory)	**Date:**	19/05/2025
Lab reference:	ES2510860; RN1462878* (*Secondary laboratory)		

Key Findings:

The groundwater water analytical data can be used as a basis for interpretation, subject to the limitations outlined below:

- The potential exists for concentrations of PFOS to be below the LOR, but above the PFAS Freshwater 99% Species Protection guideline in 10 of 23 primary samples
- Elevated RPDs for PFHxS, Sum of PFAS, PFHpS, PFOS and 6:2 FTS should be taken into consideration when using the data quantitatively.

Component		Outliers			Material impact on interpretation
		No	Yes	Comment	
Frequency of field quality assurance/quality control (QAQC)		✓			No
Number of tests requested/reported		✓			No
Sample handling/preservation/holding times			✓	1	No
Frequency of laboratory QA/QC			✓	2	No
Limits of reporting (LOR)			✓	3	No
Blank analysis	Field blank	✓			No
	Rinsate blank		✓	4	No
	Trip blank	✓			No
	Method blank	✓			No
Field inter-laboratory relative percent differences (RPDs)			✓	5	No
Field intra-laboratory RPDs			✓	6	No
Laboratory duplicate RPDs		✓			No
Matrix spike (MS) % recoveries		✓			No
Laboratory control spike (LCS) % recoveries		✓			No
Surrogate % recoveries		✓			No
Other observations		✓			No

Comments	
1. Sample handling/preservation/ holding times	Laboratory batches were received above of the APHA/NEPM recommended temperature range (≤6°C) for the water samples: Batch Number: ES2510860 Temperature (°C): 15.5°C – Darwin; 9.1 °C – Sydney The potential for under reporting is not considered to materially affect the interpretation of results as PFAS compounds are not affected by volatilisation. Further, the samples were received below the ambient groundwater at the time of sampling (~30 °C) and the samples were immediately cooled upon collection. Ice bricks have been noted to be present in the SRN. Primary samples showed generally good reproducibility with the secondary laboratory results.
2. Frequency of Laboratory QA/QC	Laboratory duplicates were not reported for PFAS utilising the EP231X-LL method in primary lab batch ES2510860. Laboratory duplicates were also not reported for at the required frequencies (7.89%/10.00%) utilising the EP231X method. The precision of the data can be assessed as acceptable based on the available laboratory duplicates and the intra- and inter-laboratory duplicate RPDs which were reported at the required frequencies and generally within control limits. Matrix spikes were not reported for PFAS utilising the EP231X-LL in primary lab batch ES2510860. The accuracy of the data can be assessed as acceptable based on method blanks, LCS and surrogate spike recoveries (which were reported at the required frequencies and within control limits), and available matrix spike recoveries for the same analytical method group (which were reported within control limits).
3. Limits of Reporting (LOR)	Limits of reporting (LOR) were sufficiently low to enable assessment against adopted guideline criteria, with the exception of PFOS in water. The potential exists for PFOS to be above the adopted PFAS Freshwater 99% Species Protection guideline (0.00023 µg/L), but below the laboratory LOR (0.01 µg/L) in the following samples: • 0990_POT125_250414 • 0990_OTH118_250415 • 0990_POT126_250414 • 0990_POT128_250415 • 0990_POT198_250414 • 0990_MW812_250415 • 0990_MW813_250415 • 0990_POT127_250415 • 0990_POT130_250415 • 0990_POT201_250415 This should be taken into consideration when interpreting PFOS results against guidelines where results are reported below the LOR.

Comments	
4. Blank Analysis - Rinsate	Rinsate sample 0990_QC300_250414 collected on 14 April 2025 reported concentrations of PFOS (0.08 µg/L), PFHxS (0.10 µg/L), and PFHxA (0.02 µg/L). This rinsate sample was taken from a disposable glove and not used across two or more sample locations. As such, the sample result does not constitute evidence of cross contamination. Rinsate samples are not to be taken when there isn't any reusable equipment utilised across two or more sample locations, however, a rinsate sample was taken in this instance and included for analysis. A review of field procedures was conducted upon with the field team to avoid future collection of unnecessary QA/QC samples. This was confirmed by a review of historically reported concentrations from sampling locations collected on this day. It was found that all samples were within historic ranges for the analytes in question, with the exception of PFOS in 0990_POT113_250414, where a new maximum was recorded, however the reproducibility of this result can be confirmed via the intra- and inter-laboratory duplicates which showed agreeance of results.
5. Field intra-laboratory relative percent differences (RPDs)	Field intra-laboratory RPDs were reported within control limits, except for the following samples (higher concentration in **bold**): • **0990_POT120_250414** & 0990_QC101_250414 for Perfluorohexane sulfonate (PFHxS) (67%) • **0990_POT201_250415** & 0990_QC102_250415 for Sum of PFAS (111%) For sample 0990_POT120_250414, the primary and intra-laboratory results were the same order of magnitude and there were no RPD exceedances between the primary and inter-laboratory samples. Therefore this exceedance of the data quality objective (DQO) is not considered to impact the interpretation of the results. For sample 0990_POT201_250415 the only detected concentration of PFAS is due to a detect of 0.35 µg/L of 6:2 FTS, where there was no RPD exceedance noted. The RPD in excess of the DQO is due to the lower LOR reported for the calculated summation result. Reproducibility issues in calculated summation results tend to be greater due to the additive errors across a sample and does not have a material impact on interpretation of results.
6. Field inter-laboratory relative percent differences (RPDs)	Field inter-laboratory RPDs were reported within control limits, except for the following samples (higher concentration in **bold**): • **0990_POT113_250414** & 0990_QC200_250414 for Perfluoroheptane sulfonic acid (PFHpS) (40%) • 0990_POT120_250414 & **0990_QC201_250414** for Perfluorooctane sulfonate (PFOS) (67%) • 0990_POT201_250415 & **0990_QC202_250415** for Perfluorooctane sulfonate (PFOS) (165%) • 0990_POT201_250415 & **0990_QC202_250415** for 6:2 Fluorotelomer sulfonic acid (6:2 FTS) (56%) As there are no adopted guidelines for PFHpS and 6:2 FTS, the RPD exceedances are not expected to affect the interpretation of results. However, this should be taken into consideration when using PFHpS and 6:2 FTS concentrations quantitatively. As concentrations of PFOS showed good agreeance between primary and intra-laboratory results and results were within historic ranges, the impact to interpretation is minimal. However, the elevated RPDs should be taken into consideration when using the data quantitatively.

Data Validation Report
Field RPDs - Water
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Relative Percentage Differences

		Date	14 Apr 2025			14 Apr 2025			14 Apr 2025		
		Field ID	0990_POT113_250414	0990_QC100_250414		0990_POT113_250414	0990_QC200_250414		0990_POT120_250414	0990_QC101_250414	
		Matrix Type	Water	Water		Water	Water		Water	Water	
		Sample Type	Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate		Primary	Intra-lab Duplicate	
		Lab Report Number	ES2510860	ES2510860	RPD	ES2510860	RN1462878	RPD	ES2510860	ES2510860	RPD
Analyte	**Unit**	**LOR**									
Per- and Poly-fluoroalkyl Substances											
Perfluorooctanoic Acid (PFOA)	µg/L	0.002	0.04	0.05	22	0.04	0.041	2	<0.01	<0.01	0
Perfluorooctane sulfonate (PFOS)	µg/L	0.002	0.97	1.06	9	0.97	0.90	7	0.02	0.02	0
Perfluorohexane sulfonate (PFHxS)	µg/L	0.002	0.66	0.60	10	0.66	0.62	6	0.02	0.01	**67**
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.02	0	<0.05	<0.05	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.002	0.10	0.08	22	0.10	0.080	22	<0.02	<0.02	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.002	0.04	0.04	0	0.04	0.038	5	<0.02	<0.02	0
Perfluorooctadecanoic Acid (PFODA)	µg/L	0.05	-	-	-	-	<0.05	-	-	-	-
Perfluorononanoic acid (PFNA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorononanesulfonic acid (PFNS)	µg/L	0.01	-	-	-	-	<0.01	-	-	-	-
Perfluorohexadecanoic acid (PFHxDA)	µg/L	0.005	-	-	-	-	<0.02	-	-	-	-
Perfluorohexanoic acid (PFHxA)	µg/L	0.002	0.17	0.18	6	0.17	0.16	6	<0.02	<0.02	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.002	0.03	0.03	0	0.03	0.020	**40**	<0.02	<0.02	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.002	<0.02	<0.02	0	<0.02	0.019	0	<0.02	<0.02	0
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorodecanoic acid (PFDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.002	0.08	0.08	0	0.08	0.085	6	<0.02	<0.02	0
Perfluorobutanoic acid (PFBA)	µg/L	0.01	<0.1	<0.1	0	<0.1	<0.05	0	<0.1	<0.1	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.02	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.02	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0
8:2 diPAP (678-41-1)	µg/L	0.02	-	-	-	-	<0.02	-	-	-	-
FOUEA (70887-84-2)	µg/L	0.01	-	-	-	-	<0.01	-	-	-	-
Sum of PFHxS and PFOS	µg/L	0.002	1.63	1.66	2	1.63	-	-	0.04	0.03	29
Sum of PFAS	µg/L	0.002	2.09	2.14	2	2.09	-	-	0.04	0.03	29

***RPDs have only been considered where a concentration is greater than 1 times the LOR.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each LOR multiplier range are: 30 (1 - 10 x LOR); 30 (10 - 30 x LOR); 30 (> 30 x LOR))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

Data Validation Report
Field RPDs - Water
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Relative Percentage Differences

		Date	14 Apr 2025			15 Apr 2025			15 Apr 2025		
		Field ID	0990_POT120_250414	0990_QC201_250414		0990_POT201_250415	0990_QC102_250415		0990_POT201_250415	0990_QC202_250415	
		Matrix Type	Water	Water		Water	Water		Water	Water	
		Sample Type	Primary	Inter-lab Duplicate		Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate	
		Lab Report Number	ES2510860	RN1462878	RPD	ES2510860	ES2510860	RPD	ES2510860	RN1462878	RPD
Analyte	**Unit**	**LOR**									
Per- and Poly-fluoroalkyl Substances											
Perfluorooctanoic Acid (PFOA)	µg/L	0.002	<0.01	<0.01	0	<0.002	<0.01	0	<0.002	<0.01	0
Perfluorooctane sulfonate (PFOS)	µg/L	0.002	0.02	0.034	**52**	<0.002	<0.01	0	<0.002	0.021	**165**
Perfluorohexane sulfonate (PFHxS)	µg/L	0.002	0.02	0.022	10	<0.002	<0.01	0	<0.002	<0.01	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.005	<0.05	<0.01	0	<0.005	<0.05	0	<0.005	<0.01	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.005	<0.05	<0.01	0	0.035	<0.05	0	0.035	0.062	**56**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.005	<0.05	<0.01	0	<0.005	<0.05	0	<0.005	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.005	<0.05	<0.01	0	<0.005	<0.05	0	<0.005	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.002	<0.02	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.002	<0.02	<0.02	0	<0.002	<0.02	0	<0.002	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.005	<0.05	<0.02	0	<0.005	<0.05	0	<0.005	<0.02	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.002	<0.02	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.002	<0.02	<0.02	0	<0.002	<0.02	0	<0.002	<0.02	0
Perfluorooctadecanoic Acid (PFODA)	µg/L	0.05	-	<0.05	-	-	-	-	-	<0.05	-
Perfluorononanoic acid (PFNA)	µg/L	0.002	<0.02	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
Perfluorononanesulfonic acid (PFNS)	µg/L	0.01	-	<0.01	-	-	-	-	-	<0.01	-
Perfluorohexadecanoic acid (PFHxDA)	µg/L	0.005	-	<0.02	-	<0.005	-	-	<0.005	<0.02	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.002	<0.02	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.002	<0.02	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.002	<0.02	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.002	<0.02	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.002	<0.02	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	0.002	<0.02	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.002	<0.02	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
Perfluorobutanoic acid (PFBA)	µg/L	0.01	<0.1	<0.05	0	<0.01	<0.1	0	<0.01	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.005	<0.05	<0.02	0	<0.005	<0.05	0	<0.005	<0.02	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.005	<0.05	<0.05	0	<0.005	<0.05	0	<0.005	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.005	<0.05	<0.02	0	<0.005	<0.05	0	<0.005	<0.02	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.005	<0.05	<0.05	0	<0.005	<0.05	0	<0.005	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.002	<0.02	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.002	<0.02	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.002	<0.02	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
8:2 diPAP (678-41-1)	µg/L	0.02	-	<0.02	-	-	-	-	-	<0.02	-
FOUEA (70887-84-2)	µg/L	0.01	-	<0.01	-	-	-	-	-	<0.01	-
Sum of PFHxS and PFOS	µg/L	0.002	0.04	-	-	<0.002	<0.01	0	<0.002	-	-
Sum of PFAS	µg/L	0.002	0.04	-	-	0.035	<0.01	**111**	0.035	-	-

***RPDs have only been considered where a concentration is greater than 1 times the LOR.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each LOR m**
*****Interlab Duplicates are matched on a per compound basis as methods vary between labora**

Data Validation Report
QA/QC Blanks
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

QA/QC Blanks

					Per- and Poly-fluoroalkyl Substances																												
					Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonate (PFOS)	Perfluorohexane sulfonate (PFHxS)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	Sum of PFHxS and PFOS	Sum of PFAS
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.01	0.01	0.01	0.05	0.05	0.05	0.05	0.02	0.02	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.1	0.05	0.05	0.05	0.05	0.02	0.02	0.02	0.01	0.01
Field ID	**Date**	**Matrix Type**	**Sample Type**	**Lab Report Number**																													
0990_QC300_250414	**14 Apr 2025**	**Water**	**Rinsate**	**ES2510860**	<0.01	**0.08**	**0.10**	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	**0.02**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	**0.18**	**0.20**
0990_QC301_250415	**15 Apr 2025**	**Water**	**Rinsate**	**ES2510860**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
0990_QC400_250414	**14 Apr 2025**	**Water**	**Field Blank**	**ES2510860**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
0990_QC401_250415	**15 Apr 2025**	**Water**	**Field Blank**	**ES2510860**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
0990_QC500_250414	**14 Apr 2025**	**Water**	**Trip Blank**	**ES2510860**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01

AECOM

DATA VALIDATION REPORT; WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801	**Date:**	29/05/2025
Site:	0990 – RAAF Base Tindal		
Matrix:	Water	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney & NMI Sydney	**Date:**	30/05/2025
Lab reference:	ES2509506, RN1462425* (*Secondary laboratory)		

Key Findings:

The analytical data can be used as a basis for interpretation.

Component		Outliers			Material impact on interpretation
		No	Yes	Comment	
Frequency of field quality assurance/quality control		✓			No
Number of tests requested/reported		✓			No
Sample handling/preservation/holding times			✓	1	No
Frequency of laboratory QA/QC			✓	2	No
Limits of reporting (LOR)		✓			No
Blank analysis	Field blank	✓			No
	Rinsate blank	✓			No
	Trip blank	✓			No
	Method blank	✓			No
Field intra-laboratory relative percent differences (RPDs)			✓	3	No
Field inter-laboratory RPDs			✓	4	No
Laboratory duplicate RPDs		✓			No
Matrix spike (MS) % recoveries		✓			No
Laboratory control spike (LCS) % recoveries		✓			No
Surrogate % recoveries		✓			No
Other comments		✓			No

Comments

1. Sample handling/ preservation/ holding times

Sample Preservation

The following laboratory batches were received outside of the recommended temperature range (≤6°C):

Batch Number	Temperature (°C)
ES2509506	29.9 °C
RN1462425	Chilled

Potential under reporting must be taken into consideration. However, the potential for under reporting is not considered to materially affect the interpretation of results due to the nature of PFAS not degrading via volatilisation. Further, the samples were received below the ambient groundwater temperature at the time of sampling (~30 °C) and the samples were immediately cooled upon collection.

DATA VALIDATION REPORT; WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801	**Date:**	29/05/2025
Site:	0990 – RAAF Base Tindal		
Matrix:	Water	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney & NMI Sydney	**Date:**	30/05/2025
Lab reference:	ES2509506, RN1462425* (*Secondary laboratory)		

2. Frequency of laboratory QA/QC	Laboratory duplicate samples were not reported for at the required frequency for PFAS (actual/expected rate (%)) (5.00%/10.00%). The precision of the data can be assessed as acceptable based on the available laboratory RPDs and field intra- and inter-laboratory duplicate RPDs which were reported at the required frequencies and within control limits. Matrix spikes were not reported at the required frequencies for PFAS method groups (actual/expected rate (%)) (0.00%/5.00%). The accuracy of the data can be assessed as acceptable based on the LCS and surrogate spike recoveries (which were reported at the required frequencies and within control limits).
3. Field intra-laboratory relative percent differences (RPDs)	Field intra-laboratory RPDs were reported within control limits, except for the following samples (higher concentration in **bold):** • 0990_SW140_250401 & **0990_QC100_250401** for PFDoDA (40%) As there are no adopted guidelines for PFDoDA, the RPD exceedances are not expected to affect the interpretation of results. However, this should be taken into consideration when using PFDoDA quantitatively.

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QA/QC Blanks
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

QA/QC Blanks

		Date	01 Apr 2025	01 Apr 2025	01 Apr 2025
		Field ID	0990_QC300_250401	0990_QC400_250401	0990_QC500_250401
		Sample Type	Rinsate	Field Blank	Trip Blank
		Lab Report Number	ES2509506	ES2509506	ES2509506
Analyte	Unit	LOR			
Per- and Poly-fluoroalkyl Substances					
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01
Perfluorooctane sulfonate (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01
Perfluorohexane sulfonate (PFHxS)	µg/L	0.01	<0.01	<0.01	<0.01
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	<0.05
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	<0.02
Sum of PFHxS and PFOS	µg/L	0.01	<0.01	<0.01	<0.01
Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01

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Field RPDs
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Relative Percentage Differences

		Date	01 Apr 2025	01 Apr 2025		01 Apr 2025	02 Apr 2025	
		Field ID	0990_SW140_250401	0990_QC100_250401		0990_SW140_250401	0990_QC200_250401	
		Sample Type	Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate	
		Lab Report Number	ES2509506	ES2509506	RPD	ES2509506	RN1462425	RPD
Analyte	**Unit**	**LOR**						
Per- and Poly-fluoroalkyl Substances								
Perfluorooctanoic Acid (PFOA)	**µg/L**	0.01	0.04	0.04	0	0.04	0.038	5
Perfluorooctane sulfonate (PFOS)	**µg/L**	0.01	0.80	0.86	7	0.80	0.93	15
Perfluorohexane sulfonate (PFHxS)	**µg/L**	0.01	0.19	0.21	10	0.19	0.20	5
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	**µg/L**	0.05	<0.05	<0.05	0	<0.05	<0.01	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	**µg/L**	0.05	<0.05	<0.05	0	<0.05	<0.01	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	**µg/L**	0.05	0.12	0.10	18	0.12	0.16	29
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	**µg/L**	0.05	<0.05	<0.05	0	<0.05	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	**µg/L**	0.02	<0.02	<0.02	0	<0.02	0.023	14
Perfluorotridecanoic acid (PFTrDA)	**µg/L**	0.02	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	**µg/L**	0.05	<0.05	<0.05	0	<0.05	<0.02	0
Perfluoropentane sulfonic acid (PFPeS)	**µg/L**	0.02	0.02	0.02	0	0.02	0.028	33
Perfluoropentanoic acid (PFPeA)	**µg/L**	0.02	<0.02	0.02	0	<0.02	0.028	33
Perfluorooctadecanoic Acid (PFODA)	**µg/L**		-	-	-	-	<0.05	-
Perfluorononanoic acid (PFNA)	**µg/L**	0.02	<0.02	<0.02	0	<0.02	0.012	0
Perfluorononanesulfonic acid (PFNS)	**µg/L**		-	-	-	-	<0.01	-
Perfluorohexadecanoic acid (PFHxDA)	**µg/L**		-	-	-	-	<0.02	-
Perfluorohexanoic acid (PFHxA)	**µg/L**	0.02	0.10	0.10	0	0.10	0.096	4
Perfluoroheptane sulfonic acid (PFHpS)	**µg/L**	0.02	0.02	0.02	0	0.02	0.019	5
Perfluoroheptanoic acid (PFHpA)	**µg/L**	0.02	<0.02	0.02	0	<0.02	0.023	14
Perfluorodecane sulfonic acid (PFDS)	**µg/L**	0.02	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)	**µg/L**	0.02	0.02	0.03	**40**	0.02	0.029	37
Perfluorodecanoic acid (PFDA)	**µg/L**	0.02	<0.02	<0.02	0	<0.02	0.015	0
Perfluorobutane sulfonic acid (PFBS)	**µg/L**	0.02	<0.02	<0.02	0	<0.02	0.021	5
Perfluorobutanoic acid (PFBA)	**µg/L**	0.1	<0.1	<0.1	0	<0.1	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	**µg/L**	0.05	<0.05	<0.05	0	<0.05	<0.02	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	**µg/L**	0.05	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	**µg/L**	0.05	<0.05	<0.05	0	<0.05	<0.02	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	**µg/L**	0.05	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	**µg/L**	0.02	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorooctane sulfonamide (FOSA)	**µg/L**	0.02	<0.02	<0.02	0	<0.02	<0.01	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	**µg/L**	0.02	<0.02	<0.02	0	<0.02	<0.01	0

***RPDs have only been considered where a concentration is greater than 1 times the ;PR.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 30 (1 - 10 x LOR); 30 (10 - 30 x LOR); 30 (> 30 x LOR))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

AECOM

DATA VALIDATION REPORT; WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801	**Date:**	23/05/2025
Site:	0990 – RAAF Base Tindal		
Matrix:	Water	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney; ALS Brisbane & NMI Sydney	**Date:**	30/05/2025
Lab reference:	ES2513390, ES2513389, ES2517036, RN1465329*, RN1465330*, RN1467920* (*Secondary laboratory)		

Key Findings:

The analytical data can be used as a basis for interpretation, subject to the limitations outlined below:

- Elevated RPDs of PFOS and PFOA in both primary lab batches (ES2513390 and ES2513389) should be taken into consideration when using the data quantitatively.

The biannual GME was completed concurrently with the project's Service Package 2b soil remediation medium term performance monitoring scope of works. The data has been assessed as one single event and therefore some duplicate parent samples may reflect these non-OMP locations.

Component		Outliers			Material impact on interpretation
		No	Yes	Comment	
Frequency of field quality assurance/quality control		✓			No
Number of tests requested/reported		✓			No
Sample handling/preservation/holding times			✓	1	No
Frequency of laboratory QA/QC			✓	2	No
Limits of reporting (LOR)			✓	3	No
Blank analysis	Field blank	✓			No
	Rinsate blank	✓			No
	Trip blank	✓			No
	Method blank	✓			No
Field intra-laboratory relative percent differences (RPDs)			✓	4	No
Field inter-laboratory RPDs			✓	5	No
Laboratory duplicate RPDs		✓			No
Matrix spike (MS) % recoveries			✓	6	No
Laboratory control spike (LCS) % recoveries		✓			No
Surrogate % recoveries		✓			No
Other comments		✓			No

Comments

1. Sample handling/ preservation/ holding times

Sample Preservation

The following laboratory batches were received outside of the recommended temperature range (≤6°C):

Batch Number	Temperature (°C)
ES253390	7.4 °C
RN1462862	Chilled

Potential under reporting must be taken into consideration. However, the potential for under reporting is not considered to materially affect the interpretation of results due to the nature of PFAS not degrading via volatilisation. Further, the samples were received below the ambient groundwater temperature at the time of sampling (~30 °C), the samples were immediately cooled upon collection and ice bricks were noted to be present on the SRN.

DATA VALIDATION REPORT; WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801	**Date:**	23/05/2025
Site:	0990 – RAAF Base Tindal		
Matrix:	Water	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney; ALS Brisbane & NMI Sydney	**Date:**	30/05/2025
Lab reference:	ES2513390, ES2513389, ES2517036, RN1465329*, RN1465330*, RN1467920* (*Secondary laboratory)		

2. Frequency of laboratory QA/QC	Laboratory duplicate samples were not reported for at the required frequency for PFAS (actual/expected rate (%)) (7.35%/10.00%) in primary laboratory batch ES2513390 and PFAS (5.88%/10.00%) for primary batch ES2513389. The precision of the data can be assessed as acceptable based on the available laboratory RPDs and field intra- and inter-laboratory duplicate RPDs which were reported at the required frequencies and generally within control limits. Matrix spikes were not reported at the required frequencies for PFAS method groups (actual/expected rate (%) (2.94%/5.00%) in primary laboratory batch ES2513390 and PFAS (2.94%/5.00%) for primary batch ES2513389. The accuracy of the data can be assessed as acceptable based on method blanks, LCS and surrogate spike recoveries (which were reported at the required frequencies and within control limits) and available matrix spike recoveries.
3. Limits of reporting	Limits of reporting (LOR) were sufficiently low to enable assessment against adopted guideline criteria, with the exception of PFOS in water. The potential exists for PFOS to be above the adopted PFAS Freshwater 99% Species Protection guideline (0.00023 µg/L), but below the laboratory LOR (0.01 µg/L) in the following samples in lab batch ES2513390: • 0990_MW133_250506 • 0990_MW136_250506 • 0990_MW144_250506 • 0990_MW403_250508 • 0990_OTH120_250502 • 0990_POT111_250507 • 0990_POT131_250430 This should be taken into consideration when interpreting PFOS results against guidelines where results are reported below the LOR.
4. Field intra-laboratory relative percent differences (RPDs)	Field intra-laboratory RPDs were reported within control limits, except for the following samples (higher concentration in **bold):** **ES2509506** • 0990_SW140_250401 & **0990_QC100_250401** for PFDoDA (40%) **ES2513390** • 0990_MW138_250506 & **0990_QC100_250506** for PFHxA (40%) • 0990_MW285_250507 & **0990_QC102_250507** for PFPeS (67%) • 0990_MW285_250507 & **0990_QC102_250507** for PFHxA (40%) • 0990_MW285_250507 & **0990_QC102_250507** for PFBS (40%) As there are no adopted guidelines for PFDoDA, PFHxA, PFPeS or PFBS, the RPD exceedances are not expected to affect the interpretation of results. However, this should be taken into consideration when using the results quantitively.

DATA VALIDATION REPORT; WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801	**Date:**	23/05/2025
Site:	0990 – RAAF Base Tindal		
Matrix:	Water	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney; ALS Brisbane & NMI Sydney	**Date:**	30/05/2025
Lab reference:	ES2513390, ES2513389, ES2517036, RN1465329*, RN1465330*, RN1467920* (*Secondary laboratory)		

5. Field inter-laboratory RPDs	Field inter-laboratory RPDs were reported within control limits, except for the following samples (higher concentration in **bold):**

ES2513390

- **0990_MW109_250506** & 0990_QC203_250506 for PFPeS (31%)
- 0990_MW109_250506 & **0990_QC203_250506** for PFHpS (55%)
- 0990_MW138_250506 & **0990_QC200_250506** for PFOA (40%)
- 0990_MW138_250506 & **0990_QC200_250506** for PFHxA (46%)
- **0990_MW138_250506** & 0990_QC200_250506 for PFHpS (86%)
- **0990_MW400_250506** & 0990_QC210_250506 for PFHpS (76%)
- 0990_MW285_250507 & **0990_QC202_250507** for PFOA (111%)
- 0990_MW285_250507 & **0990_QC202_250507** for PFPeS (67%)
- 0990_MW285_250507 & **0990_QC202_250507** for PFPeA (73%)
- 0990_MW285_250507 & **0990_QC202_250507** for PFHxA (125%)
- 0990_MW285_250507 & **0990_QC202_250507** for PFHpA (40%)
- 0990_MW285_250507 & **0990_QC202_250507** for PFBS (87%)
- **0990_MW244_250507** & 0990_QC212_250507 for PFPeS (38%)
- **0990_MW244_250507** & 0990_QC212_250507 for PFHpS (51%)

ES2513389

- **0990_MW201I_250506** & 0990_QC201_250506 for PFOS (35%)
- **0990_MW201I_250506** & 0990_QC201_250506 for PFHpS (46%)
- 0990_MW201I_250506 & **0990_QC201_250506** for PFHpA (33%)
- **0990_MW232_250506** & 0990_QC211_250506 for PFOA (32%)
- **0990_MW232_250506** & 0990_QC211_250506 for PFOS (32%)
- **0990_MW232_250506** & 0990_QC211_250506 for PFPeS (34%)

As there are no adopted guidelines for PFPeS, PFHpS, PFHxA, PFPeA, PFHpA and PFHpS, the RPD exceedances are not expected to affect the interpretation of results. However, this should be taken into consideration when using those concentrations quantitively.
As concentrations of PFOA and PFOS were well above or well below the selected criteria, the elevated RPDs are not expected to affect interpretation of results. However, the elevated RPDs, should be taken into consideration when using the data quantitatively.

6. Matrix spike (MS) % recoveries	Matix spike recoveries (where reported) were within control limits with the exception of PFOS in primary lab batch ES2513389 and ES2513390 and PFHxS in batch ES2513389. The matrix spike recoveries were not determined for PFOS and PFHxS as the background levels were greater than or equal to 4x the spike level. These non-determinations do not reflect method bias and do not affect data interpretation. The accuracy of the data can be assessed as acceptable based on method blanks, LCS and surrogate spike recoveries (which were reported at the required frequencies and within control limits).

QA/QC Blanks

				Per- and Poly-fluoroalkyl Substances																													
				Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonate (PFOS)	Perfluorohexane sulfonate (PFHxS)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	Sum of PFHxS and PFOS	Sum of PFAS
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR				0.01	0.01	0.01	0.05	0.05	0.05	0.05	0.02	0.02	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.1	0.05	0.05	0.05	0.05	0.02	0.02	0.02	0.01	0.01
Field ID	**Date**	**Sample Type**	**Lab Report Number**																														
0990_QC300_250430	**30 Apr 2025**	**Rinsate**	**ES2513390**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
0990_QC301_250502	**02 May 2025**	**Rinsate**	**ES2513390**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
0990_QC302_250506	**06 May 2025**	**Rinsate**	**ES2513390**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
0990_QC303_250507	**07 May 2025**	**Rinsate**	**ES2513390**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
0990_QC310_250506	**06 May 2025**	**Rinsate**	**ES2513390**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
0990_QC311_250507	**07 May 2025**	**Rinsate**	**ES2513390**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
0990_QC312_250508	**08 May 2025**	**Rinsate**	**ES2513390**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
0990_QC300_250606	**06 Jun 2025**	**Rinsate**	**ES2517036**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01

		Date	01 Apr 2025	01 Apr 2025		01 Apr 2025	02 Apr 2025		06 May 2025	06 May 2025		06 May 2025	06 May 2025	
		Field ID	0990_SW140_250401	0990_QC100_250401		0990_SW140_250401	0990_QC200_250401		0990_MW109_250506	0990_QC103_250506		0990_MW109_250506	0990_QC203_250506	
		Sample Type	Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate		Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate	
		Lab Report Number	ES2509506	ES2509506	RPD	ES2509506	RN1462425	RPD	ES2513390	ES2513390	RPD	ES2513390	RN1465330	RPD
Analyte	**Unit**	**LOR**												
Per- and Poly-fluoroalkyl Substances														
Perfluorooctanoic Acid (PFOA)	µg/L	0.002	0.04	0.04	0	0.04	0.038	5	0.06	0.06	0	0.06	0.046	26
Perfluorooctane sulfonate (PFOS)	µg/L	0.002	0.80	0.86	7	0.80	0.93	15	1.45	1.49	3	1.45	1.2	19
Perfluorohexane sulfonate (PFHxS)	µg/L	0.002	0.19	0.21	10	0.19	0.20	5	0.62	0.66	6	0.62	0.62	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.005	0.12	0.10	18	0.12	0.16	29	<0.05	<0.05	0	<0.05	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	0.023	14	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.02	0	<0.05	<0.05	0	<0.05	<0.02	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.002	0.02	0.02	0	0.02	0.028	33	0.10	0.09	11	0.10	0.073	**31**
Perfluoropentanoic acid (PFPeA)	µg/L	0.002	<0.02	0.02	0	<0.02	0.028	33	0.03	0.03	0	0.03	0.034	13
Perfluorooctadecanoic Acid (PFODA)	µg/L	0.05	-	-	-	-	<0.05	-	-	-	-	-	<0.05	-
Perfluorononanoic acid (PFNA)	µg/L	0.002	<0.02	<0.02	0	<0.02	0.012	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorononanesulfonic acid (PFNS)	µg/L	0.01	-	-	-	-	<0.01	-	-	-	-	-	<0.01	-
Perfluorohexadecanoic acid (PFHxDA)	µg/L	0.005	-	-	-	-	<0.02	-	-	-	-	-	<0.02	-
Perfluorohexanoic acid (PFHxA)	µg/L	0.002	0.10	0.10	0	0.10	0.096	4	0.15	0.15	0	0.15	0.14	7
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.002	0.02	0.02	0	0.02	0.019	5	0.06	0.06	0	0.06	0.034	**55**
Perfluoroheptanoic acid (PFHpA)	µg/L	0.002	<0.02	0.02	0	<0.02	0.023	14	<0.02	<0.02	0	<0.02	0.019	0
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.002	0.02	0.03	**40**	0.02	0.029	37	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	0.015	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.002	<0.02	<0.02	0	<0.02	0.021	5	0.08	0.08	0	0.08	0.090	12
Perfluorobutanoic acid (PFBA)	µg/L	0.01	<0.1	<0.1	0	<0.1	<0.05	0	<0.1	<0.1	0	<0.1	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.02	0	<0.05	<0.05	0	<0.05	<0.02	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.02	0	<0.05	<0.05	0	<0.05	<0.02	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0

***RPDs have only been considered where a concentration is greater than 1 times the LOR.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each LOR multiplier range are: 30 (1 - 10 x LOR); 30 (10 - 30 x LOR); 30 (> 30 x LOR))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.**
Any methods in the row header relate to those used in the primary laboratory

		Date	01 Apr 2025	01 Apr 2025		06 May 2025	06 May 2025		06 May 2025	06 May 2025		06 May 2025	06 May 2025		06 May 2025	06 May 2025	
		Field ID	0990_SW140_250401	0990_QC100_250401		0990_MW138_250506	0990_QC100_250506		0990_MW138_250506	0990_QC200_250506		0990_MW201I_250506	0990_QC101_250506		0990_MW201I_250506	0990_QC201_250506	
		Sample Type	Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate		Primary	Inter-lab Duplicate		Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate	
		Lab Report Number	ES2509506	ES2509506	RPD	ES2513390	ES2513390	RPD	ES2513390	RN1465330	RPD	ES2513389	ES2513389	RPD	ES2513389	RN1465329	RPD
Analyte	**Unit**	**LOR**															
Per- and Poly-fluoroalkyl Substances																	
Perfluorooctanoic Acid (PFOA)	µg/L	0.002	0.04	0.04	0	0.01	0.01	0	0.01	0.015	40	0.07	0.08	13	0.07	0.068	3
Perfluorooctane sulfonate (PFOS)	µg/L	0.002	0.80	0.86	7	1.10	1.14	4	1.10	0.85	26	2.00	1.95	3	2.00	1.4	35
Perfluorohexane sulfonate (PFHxS)	µg/L	0.002	0.19	0.21	10	0.35	0.34	3	0.35	0.32	9	0.32	0.32	0	0.32	0.29	10
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.005	0.12	0.10	18	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.02	0	<0.05	<0.05	0	<0.05	<0.02	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.002	0.02	0.02	0	0.04	0.05	22	0.04	0.040	0	0.04	0.04	0	0.04	0.037	8
Perfluoropentanoic acid (PFPeA)	µg/L	0.002	<0.02	0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	0.03	0.03	0	0.03	0.038	24
Perfluorooctadecanoic Acid (PFODA)	µg/L	0.05	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	<0.05	-
Perfluorononanoic acid (PFNA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	0.014	0
Perfluorononanesulfonic acid (PFNS)	µg/L	0.01	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	<0.01	-
Perfluorohexadecanoic acid (PFHxDA)	µg/L	0.005	-	-	-	-	-	-	-	<0.02	-	-	-	-	-	<0.02	-
Perfluorohexanoic acid (PFHxA)	µg/L	0.002	0.10	0.10	0	0.02	0.03	40	0.02	0.032	46	0.16	0.16	0	0.16	0.12	29
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.002	0.02	0.02	0	0.03	0.03	0	0.03	0.012	86	0.07	0.06	15	0.07	0.044	46
Perfluoroheptanoic acid (PFHpA)	µg/L	0.002	<0.02	0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	0.02	0.02	0	0.02	0.028	33
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.002	0.02	0.03	40	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.002	<0.02	<0.02	0	0.05	0.05	0	0.05	0.056	11	0.05	0.05	0	0.05	0.052	4
Perfluorobutanoic acid (PFBA)	µg/L	0.01	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.05	0	<0.1	<0.1	0	<0.1	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.02	0	<0.05	<0.05	0	<0.05	<0.02	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.02	0	<0.05	<0.05	0	<0.05	<0.02	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0

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****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each LOR multiplier range are: 30 (1 - 10 x LOR); 30 (10 - 30 x LOR); 30 (> 30 x LOR))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.**
Any methods in the row header relate to those used in the primary laboratory

		Date	01 Apr 2025	01 Apr 2025		06 May 2025	06 May 2025		06 May 2025	06 May 2025		06 May 2025	06 May 2025		06 May 2025	06 May 2025	
		Field ID	0990_SW140_250401	0990_QC100_250401		0990_MW232_250506	0990_QC111_250506		0990_MW232_250506	0990_QC211_250506		0990_MW400_250506	0990_QC110_250506		0990_MW400_250506	0990_QC210_250506	
		Sample Type	Primary	Intra-lab Duplicate		Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate		Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate	
		Lab Report Number	ES2509506	ES2509506	RPD	ES2513389	ES2513389	RPD	ES2513389	RN1465329	RPD	ES2513390	ES2513390	RPD	ES2513390	RN1465330	RPD
Analyte	**Unit**	**LOR**															
Per- and Poly-fluoroalkyl Substances																	
Perfluorooctanoic Acid (PFOA)	µg/L	0.002	0.04	0.04	0	0.09	0.08	12	0.09	0.065	**32**	0.03	0.03	0	0.03	0.025	18
Perfluorooctane sulfonate (PFOS)	µg/L	0.002	0.80	0.86	7	1.34	1.34	0	1.34	0.97	**32**	0.75	0.74	1	0.75	0.66	13
Perfluorohexane sulfonate (PFHxS)	µg/L	0.002	0.19	0.21	10	1.15	1.19	3	1.15	1	14	0.48	0.46	4	0.48	0.44	9
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	0.036	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.005	0.12	0.10	18	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.02	0	<0.05	<0.05	0	<0.05	<0.02	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.002	0.02	0.02	0	0.24	0.22	9	0.24	0.17	**34**	0.08	0.08	0	0.08	0.065	21
Perfluoropentanoic acid (PFPeA)	µg/L	0.002	<0.02	0.02	0	0.08	0.07	13	0.08	0.07	13	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorooctadecanoic Acid (PFODA)	µg/L	0.05	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	<0.05	-
Perfluorononanoic acid (PFNA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorononanesulfonic acid (PFNS)	µg/L	0.01	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	<0.01	-
Perfluorohexadecanoic acid (PFHxDA)	µg/L	0.005	-	-	-	-	-	-	-	<0.02	-	-	-	-	-	<0.02	-
Perfluorohexanoic acid (PFHxA)	µg/L	0.002	0.10	0.10	0	0.35	0.34	3	0.35	0.27	26	0.08	0.08	0	0.08	0.074	8
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.002	0.02	0.02	0	0.08	0.08	0	0.08	0.051	**44**	0.04	0.03	29	0.04	0.018	**76**
Perfluoroheptanoic acid (PFHpA)	µg/L	0.002	<0.02	0.02	0	0.04	0.03	29	0.04	0.038	5	<0.02	<0.02	0	<0.02	0.011	0
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.002	0.02	0.03	**40**	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.002	<0.02	<0.02	0	0.27	0.25	8	0.27	0.25	8	0.06	0.06	0	0.06	0.064	6
Perfluorobutanoic acid (PFBA)	µg/L	0.01	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	0.075	0	<0.1	<0.1	0	<0.1	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.02	0	<0.05	<0.05	0	<0.05	<0.02	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.02	0	<0.05	<0.05	0	<0.05	<0.02	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0

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****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each LOR multiplier range are: 30 (1 - 10 x LOR); 30 (10 - 30 x LOR); 30 (> 30 x LOR))**
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		Date	01 Apr 2025	01 Apr 2025		07 May 2025	07 May 2025		07 May 2025	07 May 2025		07 May 2025	07 May 2025		07 May 2025	07 May 2025	
		Field ID	0990_SW140_250401	0990_QC100_250401		0990_MW140_250507	0990_QC104_250507		0990_MW140_250507	0990_QC204_250507		0990_MW285_250507	0990_QC102_250507		0990_MW285_250507	0990_QC202_250507	
		Sample Type	Primary	Intra-lab Duplicate		Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate		Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate	
		Lab Report Number	ES2509506	ES2509506	RPD	ES2513390	ES2513390	RPD	ES2513390	RN1465330	RPD	ES2513390	ES2513390	RPD	ES2513390	RN1465330	RPD
Analyte	**Unit**	**LOR**															
Per- and Poly-fluoroalkyl Substances																	
Perfluorooctanoic Acid (PFOA)	µg/L	0.002	0.04	0.04	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	0.01	0	<0.01	0.035	**111**
Perfluorooctane sulfonate (PFOS)	µg/L	0.002	0.80	0.86	7	0.14	0.14	0	0.14	0.11	24	0.36	0.45	22	0.36	0.46	24
Perfluorohexane sulfonate (PFHxS)	µg/L	0.002	0.19	0.21	10	0.08	0.08	0	0.08	0.085	6	0.20	0.20	0	0.20	0.25	22
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.005	0.12	0.10	18	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.05	<0.05	0	<0.05	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.02	0	<0.05	<0.05	0	<0.05	<0.02	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.002	0.02	0.02	0	<0.02	<0.02	0	<0.02	0.017	0	0.02	0.04	**67**	0.02	0.040	**67**
Perfluoropentanoic acid (PFPeA)	µg/L	0.002	<0.02	0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	0.043	**73**
Perfluorooctadecanoic Acid (PFODA)	µg/L	0.05	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	<0.05	-
Perfluorononanoic acid (PFNA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorononanesulfonic acid (PFNS)	µg/L	0.01	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	<0.01	-
Perfluorohexadecanoic acid (PFHxDA)	µg/L	0.005	-	-	-	-	-	-	-	<0.02	-	-	-	-	-	<0.02	-
Perfluorohexanoic acid (PFHxA)	µg/L	0.002	0.10	0.10	0	<0.02	<0.02	0	<0.02	0.014	0	<0.02	0.03	**40**	<0.02	0.086	**125**
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.002	0.02	0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.002	<0.02	0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	0.030	**40**
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.002	0.02	0.03	**40**	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	0.018	0	0.02	0.03	**40**	0.02	0.051	**87**
Perfluorobutanoic acid (PFBA)	µg/L	0.01	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.05	0	<0.1	<0.1	0	<0.1	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.02	0	<0.05	<0.05	0	<0.05	<0.02	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.02	0	<0.05	<0.05	0	<0.05	<0.02	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.02	<0.02	0	<0.02	<0.01	0

***RPDs have only been considered where a concentration is greater than 1 times the LOR.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each LOR multiplier range are: 30 (1 - 10 x LOR); 30 (10 - 30 x LOR); 30 (> 30 x LOR))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.**
Any methods in the row header relate to those used in the primary laboratory

		Date	01 Apr 2025	01 Apr 2025		07 May 2025	07 May 2025		07 May 2025	07 May 2025		08 May 2025	08 May 2025	
		Field ID	0990_SW140_250401	0990_QC100_250401		0990_MW244_250507	0990_QC112_250507		0990_MW244_250507	0990_QC212_250507		0990_SW178_250508	0990_QC220_250508	
		Sample Type	Primary	Intra-lab Duplicate		Primary	Intra-lab Duplicate		Primary	Interlab-Duplicate		Primary	Inter-lab Duplicate	
		Lab Report Number	ES2509506	ES2509506	RPD	ES2513390	ES2513390	RPD	ES2513390	RN1465330	RPD	ES2513387	RN1465330	RPD
Analyte	**Unit**	**LOR**												
Per- and Poly-fluoroalkyl Substances														
Perfluorooctanoic Acid (PFOA)	µg/L	0.002	0.04	0.04	0	0.81	0.80	1	0.81	0.75	8	<0.002	<0.01	0
Perfluorooctane sulfonate (PFOS)	µg/L	0.002	0.80	0.86	7	8.68	7.36	16	8.68	7.1	20	<0.002	<0.02	0
Perfluorohexane sulfonate (PFHxS)	µg/L	0.002	0.19	0.21	10	4.61	4.90	6	4.61	4.8	4	<0.002	<0.01	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.005	<0.01	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.005	<0.05	<0.05	0	2.35	2.37	1	2.35	2.3	2	<0.005	<0.01	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.005	0.12	0.10	18	<0.05	<0.05	0	<0.05	0.026	0	<0.005	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0	<0.005	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.002	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.02	0	<0.005	<0.02	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.002	0.02	0.02	0	0.87	0.79	10	0.87	0.59	**38**	<0.002	<0.01	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.002	<0.02	0.02	0	0.58	0.58	0	0.58	0.63	8	<0.002	<0.02	0
Perfluorooctadecanoic Acid (PFODA)	µg/L	0.05	-	-	-	-	-	-	-	<0.05	-	-	<0.05	-
Perfluorononanoic acid (PFNA)	µg/L	0.002	<0.02	<0.02	0	0.06	0.05	18	0.06	0.053	12	<0.002	<0.01	0
Perfluorononanesulfonic acid (PFNS)	µg/L	0.01	-	-	-	-	-	-	-	<0.01	-	-	<0.01	-
Perfluorohexadecanoic acid (PFHxDA)	µg/L	0.005	-	-	-	-	-	-	-	<0.02	-	<0.005	<0.02	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.002	0.10	0.10	0	1.13	1.08	5	1.13	0.96	16	<0.002	<0.01	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.002	0.02	0.02	0	0.37	0.36	3	0.37	0.22	**51**	<0.002	<0.01	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.002	<0.02	0.02	0	0.70	0.68	3	0.70	0.77	10	<0.002	<0.01	0
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.002	0.02	0.03	**40**	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.01	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.002	<0.02	<0.02	0	0.46	0.45	2	0.46	0.47	2	<0.002	<0.01	0
Perfluorobutanoic acid (PFBA)	µg/L	0.01	<0.1	<0.1	0	0.3	0.3	0	0.3	0.29	3	<0.01	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.02	0	<0.005	<0.02	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.005	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.02	0	<0.005	<0.02	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.005	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.01	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0	<0.002	<0.01	0

***RPDs have only been considered where a concentration is greater than 1 times the LOR.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each LOR multiplier range are: 30 (1 - 10 x LOR); 30 (10 - 30 x LOR); 30 (> 30 x LOR))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.**
Any methods in the row header relate to those used in the primary laboratory

		Date	01 Apr 2025	01 Apr 2025		06 Jun 2025	06 Jun 2025		06 Jun 2025	06 Jun 2025	
		Field ID	0990_SW140_250401	0990_QC100_250401		0990_MW815_250606	0990_QC100_250606		0990_MW815_250606	0990_QC200_250606	
		Sample Type	Primary	Intra-lab Duplicate		Primary	Interlab-Duplicate		Primary	Inter-lab Duplicate	
		Lab Report Number	ES2509506	ES2509506	RPD	ES2517036	ES2517036	RPD	ES2517036	RN1467920	RPD
Analyte	**Unit**	**LOR**									
Per- and Poly-fluoroalkyl Substances											
Perfluorooctanoic Acid (PFOA)	µg/L	0.002	0.04	0.04	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorooctane sulfonate (PFOS)	µg/L	0.002	0.80	0.86	7	0.14	0.13	7	0.14	0.13	7
Perfluorohexane sulfonate (PFHxS)	µg/L	0.002	0.19	0.21	10	0.09	0.09	0	0.09	0.077	16
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.005	0.12	0.10	18	<0.05	<0.05	0	<0.05	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.02	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.002	0.02	0.02	0	<0.02	<0.02	0	<0.02	0.011	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.002	<0.02	0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorooctadecanoic Acid (PFODA)	µg/L	0.05	-	-	-	-	-	-	-	<0.05	-
Perfluorononanoic acid (PFNA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorononanesulfonic acid (PFNS)	µg/L	0.01	-	-	-	-	-	-	-	<0.01	-
Perfluorohexadecanoic acid (PFHxDA)	µg/L	0.005	-	-	-	-	-	-	-	<0.02	-
Perfluorohexanoic acid (PFHxA)	µg/L	0.002	0.10	0.10	0	<0.02	<0.02	0	<0.02	0.010	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.002	0.02	0.02	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.002	<0.02	0.02	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.002	0.02	0.03	40	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	0.015	0
Perfluorobutanoic acid (PFBA)	µg/L	0.01	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.02	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.02	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.005	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.002	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.01	0

***RPDs have only been considered where a concentration is greater than 1 times the LOR.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each LOR multiplier range are: 30 (1 - 10 x LOR); 30 (10 - 30 x LOR); 30 (> 30 x LOR))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.**
Any methods in the row header relate to those used in the primary laboratory

Appendix F

Chain of Custody

~~28/3~~ ~~4/3~~ ~~28/2~~

AEC009/250221/1 ZH

CHAIN OF CUSTODY

CoC #: (if applicable)

Mandatory Fields					
CLIENT CODE:		*PROJECT MANAGER:	[redacted]	SAMPLER:	[redacted]
*CLIENT:	AECOM	*PM MOBILE:	[redacted]	SAMPLER MOBILE:	[redacted]
OFFICE: (Invoiced Office)	Darwin	ALS QUOTE # (Client PL if blank)	SY/139/19 V3	PURCHASE ORDER NO.:	60676801 / 7.03.01
PROJECT NO./PROJECT:	NT_0990_PFASOMP_25			SITE:	PP & Cossack GME
*INVOICE TO: (client default if nil)	[redacted]			☐ CC Invoice to PM	
*EMAIL REPORTS TO: (default to PM if blank)	[redacted]				

BIOSECURITY

Country of Origin:

Environmental Division Sydney
Work Order Reference
ES2504689

Telephone : - 61-2-8784 8555

*** STORAGE REQUIREMENTS** Please check box. →
Standard Storage time from receipt of samples: Waters - 3 weeks, Soils - 2 months
☒ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** Please check box. →
(Not all tests can be expedited, contact Client Services for more information)
☒ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

***ANALYSIS REQUIRED**
(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

Comments:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	WATER - EP231X PFAS Full Suite (31 analytes)	WATER - EP231X-LL PFAS - Full Suite (31 analytes) Low Level	Lab QC (additional bottles req.) Dup.	MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
1	0990_POT112_250217		17/02/2025	2	w	X		☐	☐	
2	0990_POT128_250217		17/02/2025	2	w		X	☐	☐	
3	0990_POT113_250217		17/02/2025	2	w	X		☐	☐	
4	0990_POT129_250217		17/02/2025	2	w		X	☐	☐	
5	0990_OTH119_250217		17/02/2025	2	w		X	☐	☐	
6	0990_POT126_250217		17/02/2025	2	w		X	☐	☐	
7	0990_POT131_250217		17/02/2025	2	w		X	☐	☐	
8	0990_OTH117_250217		17/02/2025	2	w		X	☐	☐	
9	0990_POT125_250217		17/02/2025	2	w		X	☐	☐	
10	0990_POT130_250218		18/02/2025	2	w		X	☐	☐	

Subcon / Forward Lab / Split WO: NMI
Lab / Analyst:
Organised By / Date:
Relinquished By / Date:
Connote / Courier: QC FWD
WO No: ES2504689
Attached By PO / Internal Sheet:

21 FEB 2025 12:22

PW (c)

21 FEB 2025 12:22

Receipt Detail (Lab Use ONLY)	Chilling Method:	Ice: Frozen / Melted	Ice Bricks: Frozen / Thawed	None	Sample Temp at Receipt	°C °C °C	Security Seal Intact (circle)	Yes / No / NA(None)	Carrier Details	☐ Courier/Post ☐ Client	Packaging: (Circle)	Hard Esky	Foam Esky	Box/Bag/Other
									Con Note #		Count	#	#	#

Relinquished by: 19/02/25	Signature: [redacted]	Date/Time:	Received by: [redacted]	Signature: [redacted]	Date/Time: 19/2 10:28
Relinquished by:	Signature: [redacted]	Date/Time:	Received by:	Signature:	Date/Time:

CHAIN OF CUSTODY

CoC #: (if applicable)

Mandatory Fields

CLIENT		*PROJE	[redacted]	SAMPLER:	[redacted]
*CLIENT:	AECOM	*PM		SAMPLER	
OFFICE:	Darwin	ALS	SY/139/19 V3	PURCHASE	60676801 / 7.03.01
PROJECT		NT_0990_PFASOMP_25		SITE:	PP & Cossack GME

*INVOICE TO: (client default if null) [redacted] ☐ CC Invoice to PM

BIOSECURITY

Country of Origin:

*EMAIL REPORTS TO: (default to PM if blank) [redacted]

***ANALYSIS REQUIRED**

(NB: ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

*** STORAGE REQUIREMENTS**
Please check box →
Standard Storage time from receipt of samples:
Waters - 3 weeks
Soils - 2 months

☐ Standard Stora
☐ Extended Stor
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND**
Please check box →
(Not all tests can be expedited, contact Client Services for more information)
☐ ☐ ☐ ☐

WO Sticker to go here. (ALS use only)

Comments:

ALS Use Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B)	WATER - EP231X PFAS - Full Suite (31 analytes)	WATER - EP231X-LL PFAS - Full Suite (31 analytes) Low Level											Lab QC (additional) Dup	Lab QC (additional) MS	Additional Information (Comment on hazards - e.g. asbestos, known risk)
11	0990_POT120_250217		17/02/2025	2	w	X												☐	☐	
12	0990_POT121_250218		18/02/2025	2	w	X												☐	☐	
13	0990_POT201_250218		18/02/2025	2	w	X												☐	☐	
14	0990_POT198_250218		18/02/2025	2	w		X											☐	☐	
15	0990_OTH118_250218		18/02/2025	2	w		X											X	X	Extra for Lab QC
16	0990_POT127_250218		18/02/2025	2	w		X											☐	☐	
17	0990_QC100_250217		17/02/2025	2	w	X												☐	☐	
—	0990_QC200_250217		17/02/2025	2	w	X							N25/002651					☐	☐	PLS FWD TO NMI
18	0990_QC300_250217		17/02/2025	2	w	X												☐	☐	
19	0990_QC400_250217		17/02/2025	2	w	X												☐	☐	

Receipt Detail (Lab Use)	Chilling Method:	Ice: Frozen / Melted	Ice Bricks: Frozen /	None	Sample Temp °C °C °C	Yes / No / NA(None)	Carrier Details Con Note #	☐ Courier/Post	☐ Client	Packaging: (Circle) Count	Hard Esky #	Foam Esky #	Bag/O #

Relinquished by:
Relinquished by:

Received by: [redacted] Signature Date/Time: 20/2/25 1130
Received by: Signature Date/Time:

CHAIN OF CUSTODY

Mandatory Fields					
CLIENT CODE:		*PROJECT MANAGER:	[redacted]	SAMPLER:	[redacted]
*CLIENT:	AECOM	*PM MOBILE:		SAMPLER MOBILE:	
OFFICE: (Invoiced Office)	Darwin	ALS QUOTE # (Client PL if blank)	SY/139/19 V3	PURCHASE ORDER NO.:	60676801 / 7.03.01
PROJECT		NT_0990_PFASOMP_25		SITE:	PP & Cossack GME
*INVOICE TO: (client default if nil)		[redacted]		CC Invoice to PM ☐	
*EMAIL REPORTS TO: (default to PM if blank)	[redacted]				

CoC #: (if applicable)

BIOSECURITY

Country of Origin:

WO Sticker to go here. (ALS use only)

***STORAGE REQUIREMENTS** Please check box. →
Standard Storage time from receipt of samples: Waters - 3 weeks, Soils - 2 months

☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** Please check box. →
(Not all tests can be expedited, contact Client Services for more information)

☐ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

***ANALYSIS REQUIRED**
(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

Comments:

ALS Use Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P)	WATER - EP231X-PFAS - Full Suite (31 analytes)	WATER - EP231X-LL PFAS - Full Suite (31 analytes) Low Level										Lab QC (additional) Dup	MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
20	0990_QC500_250217		17/02/2025	2	w	x											☐	☐	
21	0990_QC101_250217		17/02/2025	2	w	x											☐	☐	
—	0990_QC201_250217		17/02/2025	2	w	x											☐	☐	PLS FWD ONTO NMI
22	0990_QC301_250218		18/02/2025	2	w	x											☐	☐	
23	0990_QC401_250218		18/02/2025	2	w	x											☐	☐	
24	0990_MW808_250218		18/02/2025	2	w	x											☐	☐	
25	0990_MW809_250218		18/02/2025	2	w	x											☐	☐	
26	0990_MW810_250218		18/02/2025	2	w	x											☐	☐	
27	0990_MW811_250218		18/02/2025	2	w	x											☐	☐	
28	0990_MW812_250218		18/02/2025	2	w	x											☐	☐	

N25/002652

Receipt Detail (Lab Use)	Chilling Method:	Ice: Frozen /	Ice Bricks: Frozen / Thawed	None	Sample Temp at Receipt	°C	°C	°C	Security Seal Intact (circle)	Yes / No / NA(None)	☐ Courier/Post	☐ Client	Packaging: (Circle) Count	Hard Esky #	Foam Esky #	Box/Bag/Other #

Relinquished by:	Signature:	Date/	Received by [redacted]	Signature	Date/Time: 20/2/25 1130
Relinquished by:	Signature:	Date/	Received by	Signature	Date/Time:

CHAIN OF CUSTODY

Mandatory Fields					
CLIENT		*PROJECT	[redacted]	SAMPLER:	[redacted]
*CLIENT:	AECOM	*PM		SAMPLER	
OFFICE: (Invoiced	Darwin	ALS QUOTE'# (Client PL if blank)	SY/139/19 V3	PURCHASE ORDER NO.:	60676801 / 7.03.01
PROJECT NO /PROJ		NT_0990_PFASOMP_25		SITE:	PP & Cossack GME
*INVOICE TO:	[redacted]			☐ CC Invoice to PM	
*EMAIL REPORTS TO: (default to PM if blank)	[redacted]				

CoC #: (if applicable)

BIOSECURITY

Country of

WO Sticker to go here. (ALS use only)

*** STORAGE REQUIREMENTS** Please check box: →
☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Standard Storage time from receipt of samples: Waters - 3 weeks, Soils - 2 months
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** Please check box. →
☐ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)
(Not all tests can be expedited, contact Client Services for more information)

***ANALYSIS REQUIRED**
(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

Comments:

ALS Use Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediment (SD), Dust (D), Product (P), Biota (B)	WATER - EP231X PFAS - Full Suite (31 analytes)	WATER - EP231X-LL PFAS Full Suite (31 analytes) Low Level	Lab QC (additional) Dup	Lab QC (additional) MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
29	0990_QC102_250218		18/02/2025	2	w	X		☐	☐	
—	0990_QC202_250218		18/02/2025	2	w	X		☐	☐	PLS FWD TO NMI
30	0990_MW813_250218		18/02/2025	2	w	X		☐	☐	
				2	w			☐	☐	
				2	w			☐	☐	
				2	w			☐	☐	
				2	w			☐	☐	
				2	w			☐	☐	
				2	w			☐	☐	
				2	w			☐	☐	

N25/002653

Receipt Detail (Lab Use Only)	Chilling Method:	Ice: Frozen / Melted	Ice Bricks: Frozen / Thawed	None	Sample Temp	°C	°C	°C	Security Seal Intact (circle)	Yes / No / NA(None)	Carrier Details Con Note #	☐ Courier/Post	☐ Client	Packaging: (Circle) Count	Hard Esky #	Foam Esky #	Box/Bag/Other #

Relinquished	19/02/25	Signature: [redacted]	Date/Time:	Received by [redacted]	Signature	Date/Time: 30/2/25 1130
Relinquished		Signature: [redacted]	Date/Time:	Received by	Signature	Date/Time:

A ECO11/250327/1 ~~AECO09/250327/1~~ 2H 3/04

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐BRISBANE 22 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐MACKAY 75 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: AECOM	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☐ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE:		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
PROJECT: NT_0990_PFASOMP_25	ALS QUOTE NO.: SY/139/19 V3	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER: 60740596/1.05.11		COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: [redacted]	CONTACT PH:	OF: 1 2 3 4 5 6 7	Other comment:
SAMPLER [redacted]	SAMPLER MOBILE: [redacted]		
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):		
[redacted]			
Email Invoice to (will default to PM if no other addresses are listed): [redacted]			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
[redacted]	[redacted]		[redacted]
DATE/TIME: 25/03 1200	DATE/TIME: 25/3 12:00	DATE/TIME:	DATE/TIME: 26/3/25 1100

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION				Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	WATER - EP231X PFAS - Full Suite (31 analytes)	WATER - EP231X-LL PFAS - Full Suite (31 analytes) Low Level	
1	0990_POT112_250317	17/03/2025	W		2	X		
2	0990_POT129_250317	17/03/2025	W		2		X	
3	0990_OTH119_250317	17/03/2025	W		2		X	
4	0990_POT126_250317	17/03/2025	W		2		X	
5	0990_POT131_250317	17/03/2025	W		2		X	
6	0990_POT114_250317	17/03/2025	W		2		X	
7	0990_POT124_250317	17/03/2025	W		2		X	
8	0990_POT120_250317	17/03/2025	W		2		X	
9	0990_POT130_250318	18/03/2025	W		2		X	
10	0990_POT121_250318	18/03/2025	W		2	X		
11	0990_POT201_250318	18/03/2025	W		2		X	
12	0990_POT198_250318	18/03/2025	W		2		X	
				TOTAL	24			

Subcon / Forward Lab / Split WO
Lab / Analysis: NMI
Organised By / Date:
Relinquished By / Date:
Connote / Courier: QC FWD
WO No: ES2508369
Attached By PO / Internal Sheet:

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

27 MAR 2025 15:27
27 MAR 2025 15:27

Environmental Division Sydney
Work Order Reference
ES2508369
Telephone : + 61-2-8784 8555

0

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8350 0899 E: adelaide@alsglobal.com
☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5/555 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Dalgleish Court Stuart QLD 4811 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: AECOM	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☐ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: DARWIN		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
PROJECT: NT_0990_PFASOMP_25	ALS QUOTE NO.: SY/139/19 V3	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER: 60740596/1.05.11		COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: [redacted]	CONTACT PH:	OF: 1 2 3 4 5 6 7	Other comment:
SAMPLER [redacted]	SAMPLER MOBILE: [redacted]		
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):		
[redacted]			
Email Invoice to (will default to PM if no other addresses are listed) [redacted]			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
[redacted]	[redacted]		[redacted]
DATE/TIME: 25/03 1200	DATE/TIME:	DATE/TIME:	D 26/3/25 1100

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	WATER - EP231X PFAS - Full Suite (31 analytes)	WATER - EP231X-LL PFAS - Full Suite (31 analytes) Low Level							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc. 27 MAR 2025 15:27 27 MAR 2025 15:27
13	0990_OTH118_250318	18/03/2025	W		2		X							
14	0990_POT127_250318	18/03/2025	W		2	X								
15	0990_QC100_250317	17/03/2025	W		2		X							
—	0990_QC200_250317	17/03/2025	W	N25/004722	2		X							Please forward to NMI***
16	0990_QC101_250317	17/03/2025	W		2	X								
—	0990_QC201_250317	17/03/2025	W	N25/004723	2	X								Please forward to NMI***
17	0990_QC400_250317	17/03/2025	W		2	X								
18	0990_QC400_250318	18/03/2025	W		2	X								
19	0990_QC500_250318	17/03/2025	W		2	X								
														②
				TOTAL	18									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

CLIENT: AECOM	TURNAROUND REQUIREMENTS : ☐ Standard TAT (List due date):
OFFICE: DARWIN	(Standard TAT may be longer for some tests e.g., Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date): URGENT
PROJECT: NT_0990_PFASOMP_25	ALS QUOTE NO.: SY/139/19 V3
ORDER NUMBER: 60740596/1.05.11	
PROJECT MANAGER: [redacted]	CONTACT PH:
SAMPLER: [redacted]	SAMPLER MOBILE [redacted]
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):

COC SEQUENCE NUMBER (Circle)

COC:	1	2	3	4	5	6	7
OF:	1	2	3	4	5	6	7

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt	°C		
Other comment			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
[redacted]	[redacted] 12:00		[redacted]
DATE/TIME: 25/03 1200	DATE/TIME: 25/3 /25	DATE/TIME:	DATE/TIME: 26/3/25 1100

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED Including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	WATER - EP231X PFAS - Full Suite (31 analytes)	WATER - EP231X-LL PFAS - Full Suite (31 analytes) Low Level							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	0990_POT113_250317	17/03/2025	W		3	X								Extra bottles for Lab QC - dup + MS
	0990_POT128_250317	17/03/2025	W		3		X							Extra bottles for Lab QC - dup + MS
	0990_POT125_250317	17/03/2025	W		2		X							
	0990_OTH117_250317	17/03/2025	W		2		X							
														PLEASE SEND TO ALS BRISBANE FOR ANALYSIS
				TOTAL	10									

Environmental Division Sydney
Work Order Reference
ES2508368

Telephone : +61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

CLIENT: AECOM	TURNAROUND REQUIREMENTS : ☒ Standard TAT (List due date):
OFFICE: Carlton	(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):
PROJECT: NT_0990_PFASOMP_25	ALS QUOTE NO.: SY/139/19 V3
ORDER NUMBER: 60740596/1.05.11	
PROJECT MANAGER [redacted]	CONTACT PH:
SAMPLER: [redacted]	SAMPLER MOBILE [redacted]
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):

COC SEQUENCE NUMBER (Circle)

COC:	1	2	3	4	5	6	7
OF:	1	2	3	4	5	6	7

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comment:			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
[redacted]	[redacted]		[redacted]
DATE/TIME: 25/03 1200	DATE/TIME: 25/3 12:00	DATE/TIME:	26/3/25 1100

[redacted]

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ANALYSIS REQUIRED including SUITES (NB: Suite Codes must be listed to attract suite price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION									Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	WATER - EP231X PFAS - Full Suite (31 analytes)							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	0990_MW808_250320	20/03/2025	W		2	X							
2	0990_MW809_250320	20/03/2025	W		2	X							
3	0990_MW810_250320	20/03/2025	W		3	X							Extra bottles for Lab QC - dup + MS
4	0990_MW811_250320	20/03/2025	W		2	X							
5	0990_MW812_250320	20/03/2025	W		2	X							
6	0990_MW813_250320	20/03/2025	W		2	X							
7	0990_QC100_250320	20/03/2025	W		2	X							
—	0990_QC200_250320	20/03/2025	W		2	X							Please forward to NMI***
8	0990_SW153_250319	19/03/2025	W		2	X							
9	0990_SW110_250319	19/03/2025	W		2	X							
10	0990_SW161_250319	19/03/2025	W		2	X							
11	0990_SW108_250319	19/03/2025	W		2	X							
				TOTAL	25								

Subcon / Forward Lab / Split WO

Lab / Analysis: NMI

Organised By / Date:

Relinquished By / Date:

Connote / Courier: QC FWD

WO No: ES2508367

Attached By PO / Internal Sheet:

Environmental Division Sydney
Work Order Reference
ES2508367

Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

☐ ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8260 9811 E: adelaide@alsglobal.com

☐ BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

☐ GLADSTONE 39 Kirkpatrick Drive Gladstone QLD 4680 Ph: 07 4971 9700 E: gladstone@alsglobal.com

☐ SYDNEY 78 Padman Drive Marrickville QLD 4740 Ph: 07 3243 7222 E: marrickville@alsglobal.com

☐ MELBOURNE 24 Walnut Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

☐ MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

☐ NEWCASTLE 5/40 Madeline St Hexham NSW 2322 Ph: 02 4964 9850 E: samples.newcastle@alsglobal.com

☐ PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9250 1200 E: samples.perth@alsglobal.com

☐ SINGAPORE 8 Tuas South Avenue 14 Singapore 637141 Ph: +65 6890 9126 E: samples.singapore@alsglobal.com

☐ TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: +61 7 4796 0600 E: samples.townsville@alsglobal.com

☐ VANCOUVER 21393 Langley Bypass Langley BC V3A 8G4 Ph: +1 604 514 3126 E: samples.vancouver@alsglobal.com

CLIENT: AECOM	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☐ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: [redacted]		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
PROJECT: NT_0990_PFASOMP_25	ALS QUOTE NO.: SY/139/19 V3	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER: 60740596/1.05.11		COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: [redacted]	CONTACT PH:	OF: 1 2 3 4 5 6 7	Other comment:
SAMPLER [redacted]	SAMPLER MOBILE: [redacted]		
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):		

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
[redacted]			[redacted]
DATE/TIME: 25/03 1200	DATE/TIME:	DATE/TIME:	26/3/25 1100

[redacted]

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED Including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	WATER - EP231X PFAS - Full Suite (31 analytes)								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
12	0990_SW100_250319	19/03/2025	W		2	X								
13	0990_QC100_250319	19/03/2025	W		2	X								
—	0990_QC200_250319	19/03/2025	W		2	X								Please forward to NMI***
14	0990_QC300_250319	19/03/2025	W		2	X								
15	0990_QC400_250319	19/03/2025	W		2	X								
16	0990_QC300_250320	20/03/2025	W		2	X								
17	0990_QC400_250320	20/03/2025	W		2	X								
18	0990_QC500_250319	19/03/2025	W		2	X								
				TOTAL	16									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Mandatory Fields	CHAIN OF CUSTODY					Page 1 of 4
CLIENT CODE:		*PROJECT MANAGER:	[redacted]	SAMPLER:	[redacted]	
*CLIENT:	AECOM Australia Pty Ltd	*PM MOBILE:	[redacted]	SAMPLER MOBILE:	[redacted]	CoC #: (if applicable)
OFFICE: (Invoiced Office)	Darwin	ALS QUOTE # (Client PL if blank)	SY/139/19 V3	PURCHASE ORDER NO.:	60676801 / 7.03.01	
PROJECT NO./PROJECT:	NT_0990_PFASOMP_25			SITE:	Private Property & Cossack GME	
*INVOICE TO: (client default if nil)	[redacted]				☐ CC Invoice to PM	BIOSECURITY
*EMAIL REPORTS TO: (default to PM if blank)	[redacted]					Country of Origin:

***ANALYSIS REQUIRED**
(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract solid/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

*** STORAGE REQUIREMENTS**
Please check box. →
Standard Storage time from receipt of samples:
Waters - 3 weeks
Soils - 2 months

☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND**
Please check box. →
(Not all tests can be expedited, contact Client Services for more information)

☐ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

Comments:

Environmental Division Sydney
Work Order Reference
ES2510860
Telephone : + 61-2-8784 8555

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biofoil (BS)	WATER - EP231X PFAS - Full Suite (31 analytes)	WATER - EP231X-LL PFAS - Full Suite (31 analytes) Low Level	Lab QC (additional bottles req.) Dup	Lab QC (additional bottles req.) MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
1	0990_POT112_250414		14/04/2025	2	W	X		☐	☐	
2	0990_POT128_250414		14/04/2025	2	W		X	☐	☐	
3	0990_POT113_250414		14/04/2025	2	W	X		☐	☐	
4	0990_POT129_250114		14/04/2025	2	W		X	☐	☐	
5	0990_OTH119_250414		14/04/2025	2	W		X	☐	☐	
6	0990_POT126_250414		14/04/2025	2	W		X	☐	☐	
7	0990_OTH117_250414		14/04/2025	2	W		X	☐	☐	
8	0990_POT125_250414		14/04/2025	2	W		X	☐	☐	
9	0990_POT130_250415		15/04/2025	2	W		X	☐	☐	
10	0990_POT121_250415		15/04/2025	2	W	X		☐	☐	

Subcontracting Laboratory: Split WO
Lab / Analysis: NMI
Organised By / Date:
Relinquished By / Date:
Consignee / Courier: QL FWD
WO No: ES2510860
Attached By PO / Internal Sheet:

Receipt Detail (Lab Use ONLY)						
Chilling Method:	Ice: Frozen / Melted	Ice Bricks: Frozen / Thawed	None	Sample Temp at Receipt	°C °C °C	Security Seal Intact (circle) Yes / No / NA(None)
Carrier Details	☐ Courier/Post	☐ Client	Con Note #	Packaging: (Circle)	Hard Esky	Foam Esky	Box/Bag/Other
				Count	#	#	#

Relinquished by: [redacted]	Signature: [redacted]	Date/Time: 15/4/25 1:00	Received by: [redacted]	Signature: [redacted]	Date/Time: 15/4/25 1:00
Relinquished by: [redacted]	Signature: [redacted]	Date/Time:	Received by: [redacted]	Signature: [redacted]	Date/Time: 16/4/25 1100

Mandatory Fields | **CHAIN OF CUSTODY**

CoC Reference:

CLIENT CODE:		*PROJECT MANAGER:	[redacted]	SAMPLER:	[redacted]
*CLIENT:	AECOM Australia Pty Ltd	*PM MOBILE:		SAMPLER MOBILE:	
OFFICE: (Invoiced Office)	Darwin	ALS QUOTE # (Client PL Blank)	SY/139/19 V3	PURCHASE ORDER NO.:	60676501 / 7.03.01
PROJECT NO./PROJECT		NT_0990_PFASOMP_25		SITE:	Private Property & Cossack GME
*INVOICE TO: (Where applicable only)	[redacted]			☐ CC Invoice to PM	BIOSECURITY
*EMAIL REPORTS TO: (Default to PM if blank)	[redacted]				Country of Origin:

***ANALYSIS REQUIRED**
(NB: ALS Quote the 'Analytic Suite Code' that is linked to analytes/analytical groups)
Where tick boxes required, specify total number of bottles required, or if preferred, tick of filled bottle required.
Mark an X in the boxes below analysis to indicate the parameters listed above to be tested on that sample.

*** STORAGE REQUIREMENTS** (Please check box →)
☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Standard Storage time from receipt of samples: Water - 2 weeks; Soils - 2 months
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** (Please check box →)
☐ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)
(Not all tests can be expedited, contact Client Services for more information)

Comments:

WO Sticker to go here. (ALS use only)

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Fresh/Liquid (P), Biota (B), Biosolid (BS)	WATER - EP231X PFAS - Full Suite (31 analytes)	WATER - EP231X-LL PFAS - Full Suite (31 analytes) Low Level										Lab QC (additional aliquots req.) Trip	MS	Additional Information (Comment on hazards, e.g. asbestos, known high contamination)
1	0990_POT120_250414		14/04/2025	2	w	X											☐	☐	
2	0990_POT198_250414		14/04/2025	2	w		X										☐	☐	
3	0990_POT201_250415		15/04/2025	2	w		X										☐	☐	
4	0990_POT124_250414		14/04/2025	2	w		X										☐	☐	
5	0990_POT114_250414		14/04/2025	2	w		X										☐	☐	
6	0990_POT127_250415		15/04/2025	2	w		X										☐	☐	
7	0990_OTH118_250414		14/04/2025	2	w		X										☐	☐	
8	0990_QC100_250414		14/04/2025	2	w	X											☐	☐	
9	0990_QC200_250414		14/04/2025	2	w	X											☐	☐	Pls forward to NMI
10	0990_QC300_240414		14/04/2025	2	w	X											☐	☐	

Receipt Detail (Lab Use)	Chilling Method: Ice / Frozen / Melted; Ice Blocks: Frozen / Thawed; None	Sample Temp. °C °C °C	Security Seal Intact (circle) Yes / No / NA(None)	Carrier Details Con Note #	☐ Courier/Post ☐ Client	Packaging (Circle) Count: Hard Esky, Foam Esky, Cardboard Box	
Relinquished by:	Signature:	Date/Time:	Received by:	Signature: [redacted]	Date/Time:		
Relinquished by:	Signature:	Date/Time:	Received [redacted]	Signature: [redacted]	Date/Time: 16/4/25 1460		

Mandatory Fields	CHAIN OF CUSTODY				Page 3 of 4
CLIENT CODE:		*PROJECT MANAGER:	[redacted]	SAMPLER:	[redacted]
*CLIENT:	AECOM	*PM MOBILE:	[redacted]	SAMPLER MOBILE:	CoC #: (if applicable)
OFFICE: (Invoiced Office)	Darwin	ALS QUOTE # (Client PL if blank)	SY/139/19 V3	PURCHASE ORDER NO.:	60676801 / 7.03.01
PROJECT NO./PROJECT :	NT_0990_PFASOMP_25			SITE:	Private Property & Cossack GME

*INVOICE TO: (client default if [redacted] ☐ CC Invoice to PM

*EMAIL REPORTS TO: (default to PM if blank) [redacted]

BIOSECURITY

Country of Origin:

WO Sticker to go here. (ALS use only)

*** STORAGE REQUIREMENTS** Please check box →
Standard Storage time from receipt of samples.
Waters - 2 weeks
Soils - 2 months

☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** Please check box →
(Not all tests can be expedited, contact Client Services for more information)

☐ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

***ANALYSIS REQUIRED**
(NB: ALS Quote No. and/or Analysis Suite Codes must be listed to correct quote/expected price)
Where Metals are required, specify Total/unfiltered bottle required or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

Comments:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	WATER EP231X PFAS - Full Suite (31 analytes)	WATER EP231X-LL PFAS - Full Suite (31 analytes) Low Level											Lab QC (additional bottles req.) Dup	MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
20	0990_MW808_250415		15/04/2025	2	W	X														Extra volume for lab QC
21	0990_MW809_250415		15/04/2025	2	W	X												☐	☐	
22	0990_MW810_250415		15/04/2025	2	W	X												☐	☐	
23	0990_MW811_250415		15/04/2025	2	W	X												☐	☐	
24	0990_MW812_250415		15/04/2025	2	W	X												☐	☐	
25	0990_MW813_250415		15/04/2025	2	W	X												☐	☐	
26	0990_QC400_250414		14/04/2025	2	W	X												☐	☐	
27	0990_QC301_250415		15/04/2025	2	W	X												☐	☐	
28	0990_QC401_250415		15/04/2025	2	W	X												☐	☐	
29	0990_QC500_250414		14/04/2025	2	W	X												☐	☐	

Receipt Detail (Lab Use)	Chilling Method: Ice: Frozen / Melted; Ice Bricks: Frozen / Thawed; None	Sample Temp at °C °C °C	Security Seal Intact (circle) Yes / No / NA(None)	Carrier Details Con Note #	☐ Courier/Post ☐ Client [redacted]	Packaging: (Circle) Count Hard Esky # Foam Esky # Box/Bag/Other #
Relinquished by:	Signature:	Date/ Time:	Received by: [redacted]			Date/ Time: 15/4
Relinquished by:	Signature:	Date/ Time:	Received by: [redacted]			Date/ Time: 16/4/25 1100

CHAIN OF CUSTODY

CoC # (if applicable)

Mandatory Fields					
CLIENT CODE:		*PROJECT MANAGER:	[redacted]	SAMPLER:	[redacted]
*CLIENT:	AECOM Australia Pty Ltd	*PM MOBILE:		SAMPLER MOBILE:	
OFFICE: (Analysed Office)	Darwin	ALS QUOTE # (Client PO if blank)	SY/139/19 V3	PURCHASE ORDER NO.:	60676881 / 7.03.01
PROJECT NO./PROJECT	NT_0990_PFASOMP_25			SITE:	Private Property & Coesack GME

*INVOICE TO: (Client PO/Job/Job Code) [redacted] ☐ CC Invoice to PM

*EMAIL REPORTS TO: (Include PM & Client) [redacted]

BIOSECURITY

Country of Origin:

*ANALYSIS REQUIRED
(NB: ALS Quote No. must be provided on Sale Order to analyse non-standard tests.
Where Metals, state analysis type: Total/Acid Digest/Soluble/Leachate/Amalgamation/Mercury/Hydride, as required.
Mark an X in the boxes below analysis to indicate the parameters listed above to be tested on that sample.)

*STORAGE REQUIREMENTS (Please tick box) → Standing Storage time from receipt of sample: Water - 3 weeks, Soils - 2 months
☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*TURNAROUND (Please tick box) → (Not all tests can be expedited, contact Client Services for more information)
☐ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

Comments:

WO Sticker to go here. (ALS use only)

*ALS Use Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solids(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	WATER - EP231X PFAS - Full Suite (31 analytes)	WATER - EP231X LL PFAS - Full Suite (21 analytes) Conc. Level											Use QC (additional) Dup	MS	Additional Information (Comments on hazards - eg. asbestos, hazardous chemicals, corrosive, etc.)
30	0990_QC101_250414		14/04/2025	2	w	X												☐	☐	
[illegible]	0990_QC201_250414		14/04/2025	2	w	X												☐	☐	Pls forward to NMI
31	0990_QC102_250415		15/04/2025	2	w	X												☐	☐	
[illegible]	0990_QC202_250415		15/04/2025	2	w	X												☐	☐	Pls forward to NMI

Receipt Detail (Sample Receipt): Chilling (Indicate): Ice / Ice Bricks / None; Frozen / Thawed; Sample Temp: °C °C °C; Security Seal Intact (circle): Yes / No / N/A(None); Carrier Details (Con Note #): ☐ Courier/Post ☐ Client [redacted]; Packaging: Hard Esky / Foam Esky / Cardboard Box; Qty: 4 2 2

Relinquished by:	Signature:	Date/Time:	Received by:	Signature:	Date/Time: 15/4
Relinquished by: [redacted]	Signature: [redacted]	Date/Time:	Received by: [redacted]	Signature: [redacted]	Date/Time: 16/4/25 1100

3. PFASOMP

Mandatory Fields	CHAIN OF CUSTODY			Page 1 of 7
CLIENT CODE:	*PROJECT MANAGER: [redacted]	SAMPLER: [redacted]		
*CLIENT: AECOM Australia Pty Ltd	*PM MOBILE: [redacted]	SAMPLER MOBILE: [redacted]		CoC #: (if applicable)
OFFICE: (Invoiced Office) Darwin, NT	ALS QUOTE # (Client PL if blank) SY/139/19 V3	PURCHASE ORDER NO.: 60676801/4.02		
PROJECT NO./PROJECT: NT_0990_PFASOMP_25		SITE: Tindal Biannual GME		
*INVOICE TO: (client default if nil) [redacted]			☐ CC Invoice to PM	BIOSECURITY
*EMAIL REPORTS TO: (default to PM if blank) [redacted]				

Environmental Division Sydney
Work Order Reference
ES2513390

Telephone : +61-2-8784 8555

*** STORAGE REQUIREMENTS** Please check box. → Standard time from receipt of samples: Waters - 3 weeks, Soils - 2 months

☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** Please check box. → (Not all tests can be expedited, contact Client Services for more information)

☑ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

***ANALYSIS REQUIRED**
(NB: ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

Comments:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust(D), Product(P), Biota(B), Biosolid(BS)	EP231X - PFAS	EP231X - LL - PFAS (lowlevel)	HOLD	Lab QC (additional bottles req.) Dup	MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
1 1	0990_POT131_250430		30.04.25	2			X		☐	☐	
2 2	0990_QC300_250430			2		X			☐	☐	
3 3	0990_QC400_250430			2				X	☐	☐	
4 4	0990_QC500_250430			2				X	☐	☐	
5 5	0990_OTH114_250502		02.05.25	2		X			☐	☐	
6 6	0990_OTH120_250502			2		X			☐	☐	
7 7	0990_OTH113_250502			2		X			☐	☐	
8 8	0990_QC301_250502			2		X			☐	☐	
9 9	0990_QC401_250502			2				X	☐	☐	
~~10~~ 10	0990_MW137-250506		06.05.25	2		X			☐	☐	

Subcon / Forward Lab / Split WO: NMI
Lab / Analysis:
Organised By / Date:
Relinquished By / Date:
Connote / Courier: QC FWD
WO No: ES2513390
Attached By PO / Internal Sheet:

Receipt Detail (Lab Use ONLY)	Chilling Method: Ice: Frozen / Melted; Ice Bricks: Frozen / Thawed; None	Sample Temp at Receipt 10.2 °C 9.3 °C 2.7 °C	Security Seal Intact (circle) Yes / No / NA(None)	Carrier Details ☐ Courier/Post ☑ Client; Con Note #	Packaging: (Circle) Hard Esky, Foam Esky, Box/Bag/Other; Count # # #

Relinquished by:	Signature:	Date/Time:	Received by [redacted]	Signature [redacted]	Date/Time: 2025/05/08
Relinquished by:	Signature:	Date/Time:	Received by [redacted]	Signature	Date/Time: 13/5/25 1030

Mandatory Fields	CHAIN OF CUSTODY				Page 2 of 7
CLIENT CODE:	*PROJECT MANAGER:	[redacted]	SAMPLER:	[redacted]	CoC #: (if applicable)
*CLIENT: AECOM Australia Pty Ltd	*PM MOBILE:	[redacted]	SAMPLER MOBILE:		
OFFICE: (Invoiced Office) Darwin, NT	ALS QUOTE # (Client PL if blank)	SY/139/19 V3	PURCHASE ORDER NO.:	60676801/4.02	
PROJECT NO./PROJECT:	NT_0990_PFASOMP_25		SITE:	Tindal Biannual GME	
*INVOICE TO: (client default if nil)	[redacted]			☐ CC Invoice to PM	BIOSECURITY
*EMAIL REPORTS TO: (default to PM if blank)	[redacted]				Country of Origin: (if not Australia)

*** STORAGE REQUIREMENTS** Please check box. → Standard Storage time from receipt of samples: Waters - 3 weeks, Soils - 2 months

☐ Standard Storage
☐ Extended Storage

Specify Disposal Date:

Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** Please check box. → (Not all tests can be expedited, contact Client Services for more information)

☑ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

***ANALYSIS REQUIRED**
(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

WO Sticker to go here. (ALS use only)

Comments:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	EP231X - PFAS	EP231X - LL - PFAS (lowlevel)											Lab QC (additional bottles req.) Dup	MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
11	0990_MW13B_250506		06-05-25	~~4~~		X												☑	☑	Extra vol.
12	0990_QC100_250506		↓	2		X												☐	☐	
13 ~~14~~	0990_QC200_250506			2		X												☐	☐	PLS FWD → NMI
14	0990_OTH115_250506			2		X												☐	☐	
15	0990_MW136_250506			2			X											☐	☐	
16	0990_MW815_250506			2			X											☐	☐	
17	0990_MW133_250506			2			X											☐	☐	
18	0990_MW109_250506			2		X												☐	☐	
19	0990_QC103_250506			2		X												☐	☐	
~~20~~	0990_QC203_250506			2		X												☐	☐	PLS FWD → NMI

Receipt Detail (Lab Use ONLY)	Chilling Method:	Ice: Frozen / Melted	Ice Bricks: Frozen / Thawed	None	Sample Temp at Receipt	°C °C °C	Security Seal Intact (circle)	Yes / No / NA(None)	Carrier Details Con Note #	☐ Courier/Post ☐ Client	Packaging: (Circle) Count	Hard Esky #	Foam Esky #	Box/Bag/Other #

Relinquished by:	Signature:	Date/Time:	Received by: [redacted]	Signature	Date/Time: 13/5/25 1030
Relinquished by:	Signature:	Date/Time:	Received by:	Signature	Date/Time:

Mandatory Fields	CHAIN OF CUSTODY					Page 3 of 7
CLIENT CODE:		*PROJECT MANAGER:	[redacted]	SAMPLER:	[redacted]	
*CLIENT:	AECOM Australia Pty Ltd	*PM MOBILE:		SAMPLER MOBILE:		CoC #: (If applicable)
OFFICE: (Invoiced Office)	Darwin, NT	ALS QUOTE # (Client PL if blank)	SY/139/19 V3	PURCHASE ORDER NO.:	60676801/4.02	
PROJECT NO./PROJECT:	NT_0990_PFASOMP_25			SITE:	Tindal Biannual GME	
*INVOICE TO: (client default if nil)	[redacted]				☐ CC Invoice to PM	BIOSECURITY
*EMAIL REPORTS TO: (default to PM if blank)	[redacted]					Country of Origin: (if not Australia)

*** STORAGE REQUIREMENTS** Please check box. → Standard Storage time from receipt of samples: Waters - 3 weeks, Soils - 2 months

☒ Standard Storage
☐ Extended Storage

Specify Disposal Date:

Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** Please check box. → (Not all tests can be expedited, contact Client Services for more information)

☑ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

***ANALYSIS REQUIRED**
(NB: ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

WO Sticker to go here. (ALS use only)

Comments:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	EP231X - PFAS	EP231X - LL - PFAS (lowlevel)										HOLD	Lab QC (additional bottles req.) Dup	MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
21 19	0990_QC302_250506		06.05.25	2		X												☐	☐	
22 20	0990_QC402_250506		↓	2													X	☐	☐	
23 21	0990_MW109D_250506		↓	2		X												☐	☐	
24 22	0990_MW111_250506		↓	2		X												☐	☐	
25 23	0990_MW111D_250506		↓	2		X												☐	☐	
26 24	0990_MW430_250506		↓	2		X												☐	☐	
27 25	0990_OTH112_250507		07.05.25	2		X												☐	☐	
28 26	0990_MW205_250507		↓	2		X												☐	☐	
29 27	0990_QC102_250507		↓	2		X												☐	☐	
30 ~~28~~	0990_QC202_250507		↓	2		X												☐	☐	ALS FWD → NM

Receipt Detail (Lab Use ONLY)	Chilling Method:	Ice: Frozen / Melted	Ice Bricks: Frozen / Thawed	None	Sample Temp at Receipt	°C °C °C	Security Seal Intact (circle)	Yes / No / NA(None)	Carrier Details Con Note #	☐ Courier/Post ☐ Client	Packaging: (Circle) Count	Hard Esky #	Foam Esky #	Box/Bag/Other #

Relinquished by:	Signature:	Date/Time:	Received by: [redacted]	Signature	Date/Time: 13/5/25 1030
Relinquished by:	Signature:	Date/Time:	Received by: [redacted]	Signature	Date/Time:

Mandatory Fields	CHAIN OF CUSTODY			Page 4 of 7
CLIENT CODE:	*PROJECT MANAGER: [redacted]	SAMPLER: [redacted]		
*CLIENT: AECOM Australia Pty Ltd	*PM MOBILE: [redacted]	SAMPLER MOBILE: [redacted]		CoC #: (if applicable)
OFFICE: (Invoiced Office) Darwin, NT	ALS QUOTE # (Client PL if blank) SY/139/19 V3	PURCHASE ORDER NO.: 60676801/4.02		
PROJECT NO./PROJECT: NT_0990_PFASOMP_25		SITE: Tindal Biannual GME		
*INVOICE TO: (client default if nil) [redacted]		☐ CC Invoice to PM		BIOSECURITY
*EMAIL REPORTS TO: (default to PM if blank) [redacted]				Country of Origin: (if not Australia)

*** STORAGE REQUIREMENTS** Please check box. → Standard Storage time from receipt of samples: Waters - 3 weeks, Soils - 2 months

☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** Please check box. → (Not all tests can be expedited, contact Client Services for more information)

☐ 5+ days (no surcharge)
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☐ 2 day (+30%)
☐ 1 day (+50%)

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(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

WO Sticker to go here. (ALS use only)

Comments:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	EP231X - PFAS	EP231X - LL - PFAS (lowlevel)										HOLD	Lab QC (additional bottles req.) Dup	MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
31 28	0990-QC411_250507		7/5/25	2													X	☐	☐	HOLD
32 29	0990_QC511_250507		↓	2													X	☐	☐	HOLD
33 30	0990_QC312_250508		8/5/25	2		X												☐	☐	
34 31	0990_QC412_250508		↓	2													X	☐	☐	HOLD
35 32	0990_QC512_250508		↓	2													X	☐	☐	HOLD
																		☐	☐	
																		☐	☐	
																		☐	☐	
																		☐	☐	
																		☐	☐	

Receipt Detail (Lab Use ONLY)	Chilling Method: Ice: Frozen / Melted; Ice Bricks: Frozen / Thawed; None	Sample Temp at Receipt °C °C °C	Security Seal Intact (circle) Yes / No / NA(None)	Carrier Details ☐ Courier/Post ☐ Client Con Note #	Packaging: (Circle) Hard Esky, Foam Esky, Box/Bag/Other Count # # #

Relinquished by:	Signature:	Date/Time:	Received [redacted]	Signature	Date/Time: 13/5/25 1030
Relinquished by:	Signature:	Date/Time:	Received [redacted]	Signature	Date/Time:

Mandatory Fields	CHAIN OF CUSTODY			Page 5 of 7
CLIENT CODE:	*PROJECT MANAGER: [redacted]	SAMPLER: [redacted]		
*CLIENT: AECOM Australia Pty Ltd	*PM MOBILE: [redacted]	SAMPLER MOBILE: [redacted]		CoC #: (if applicable)
OFFICE: (Invoiced Office) Darwin, NT	ALS QUOTE # (Client PL if blank) SY/139/19 V3	PURCHASE ORDER NO.: 60676801/4.02		
PROJECT NO./PROJECT: NT_0990_PFASOMP_25		SITE: Tindal Biannual GME		
*INVOICE TO: (client default if nil) [redacted]			☐ CC Invoice to PM	BIOSECURITY
*EMAIL REPORTS TO: (default to PM if blank) [redacted]				Country of Origin: (if not Australia)

*** STORAGE REQUIREMENTS** Please check box. →
Standard Storage time from receipt of samples: Waters - 3 weeks; Soils - 2 months

☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** Please check box. →
(Not all tests can be expedited, contact Client Services for more information)

☐ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
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(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price.)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

WO Sticker to go here. (ALS use only)

Comments:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	EP231X - PFAS	EP231X - LL - PFAS (lowlevel)										HOLD	Lab QC (additional bottles req.) Dup	MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
36 33	0990_MW8035_250506		6.05.25			X												☐	☐	
37 34	0990_MW104_250506					X												☐	☐	
38 35	0990_MW106_250506					X												☐	☐	
39 36	0990_MW107_250506					X												☐	☐	
40 37	0990_MW110_250506					X												☐	☐	
41 38	0990_MW118I_250506					X												☐	☐	
42 39	0990_QC310_250506					X												☐	☐	
43 40	0990_QC410_250506																X	☐	☐	HOLD
44 41	0990_QC510_250506																X	☐	☐	HOLD
45 42	0990_OTH111_250507		7.05.25				X											☐	☐	

Receipt Detail (Lab Use ONLY)	Chilling Method: Ice: Frozen / Melted; Ice Bricks: Frozen / Thawed; None	Sample Temp at Receipt °C °C °C	Security Seal Intact (circle) Yes / No / NA(None)	Carrier Details ☐ Courier/Post ☐ Client Con Note #	Packaging: (Circle) Hard Esky, Foam Esky, Box/Bag/Other Count # # #

Relinquished by:	Signature:	Date/Time:	Received by [redacted]	Signature	Date/Time: 13/5/25 1030
Relinquished by:	Signature:	Date/Time:	Received by [redacted]	Signature	Date/Time:

Mandatory Fields	CHAIN OF CUSTODY				Page 6 of 7
CLIENT CODE:	*PROJECT MANAGER:	[redacted]	SAMPLER:	[redacted]	
*CLIENT: AECOM Australia Pty Ltd	*PM MOBILE:	[redacted]	SAMPLER MOBILE:	[redacted]	CoC #: (if applicable)
OFFICE: (Invoiced Office) Darwin, NT	ALS QUOTE # (Client PL if blank)	SY/139/19 V3	PURCHASE ORDER NO.:	60676801/4.02	
PROJECT NO./PROJECT:	NT_0990_PFASOMP_25		SITE:	Tindal Biannual GME	
*INVOICE TO: (client default if nil)	[redacted]			☐ CC Invoice to PM	BIOSECURITY
*EMAIL REPORTS TO: (default to PM if blank)	[redacted]				Country of Origin: (If not Australia)

*** STORAGE REQUIREMENTS** Please check box. → Standard Storage time from receipt of samples: Waters - 3 weeks, Soils - 2 months

☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** Please check box. → (Not all tests can be expedited, contact Client Services for more information)

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☐ 2 day (+30%)
☐ 1 day (+50%)

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(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

Comments:

WO Sticker to go here. (ALS use only)

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	EP231X - PFAS	EP231X - LL - PFAS (lowlevel)	Lab QC (additional bottles req.) Dup	MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
43	0990_MW144_250506		6.05.25	2			X	☐	☐	
44	0990_MW142_250506			2		X		☐	☐	
45	0990_MW814_250506			2		X		☐	☐	
46	0990_MW400_250506			2		X		☐	☐	
47	0990_QC110_250506			2		X		☐	☐	
~~51~~	0990_QC210_250506			2		X		☐	☐	PLS FORWARD NMI
48	0990_MW130_250506			2		X		☐	☐	
49	0990_MW231_250506			2		X		☐	☐	
50	0990_MW803D_250506			2		X		☐	☐	
51	0990_MW8031_250506			2		X		☐	☐	

Receipt Detail (Lab Use ONLY)	Chilling Method: Ice: Frozen / Melted; Ice Bricks: Frozen / Thawed; None	Sample Temp at Receipt °C °C °C	Security Seal Intact (circle) Yes / No / NA(None)	Carrier Details ☐ Courier/Post ☐ Client	Packaging: (Circle) Hard Esky, Foam Esky, Box/Bag/Other; Count # # #
Relinquished by:	Signature:	Date/Time:	Received by: [redacted]	Signature	Date/Time: 13/5/25 1030
Relinquished by:	Signature:	Date/Time:	Received by: [redacted]	Signature	Date/Time:

Mandatory Fields	CHAIN OF CUSTODY			Page 7 of 7
CLIENT CODE:	*PROJECT MANAGER: [redacted]	SAMPLER: [redacted]		
*CLIENT: AECOM Australia Pty Ltd	*PM MOBILE: [redacted]	SAMPLER MOBILE: [redacted]		CoC #: (if applicable)
OFFICE: (Invoiced Office) Darwin, NT	ALS QUOTE # (Client PL if blank) SY/139/19 V3	PURCHASE ORDER NO.: 60676801/4.02		
PROJECT NO./PROJECT: NT_0990_PFASOMP_25		SITE: Tindal Biannual GME		
*INVOICE TO: (client default if nil) [redacted]			☐ CC Invoice to PM	BIOSECURITY
*EMAIL REPORTS TO: (default to PM if blank) [redacted]				Country of Origin: (if not Australia)

*** STORAGE REQUIREMENTS** (Please check box. →) Standard Storage time from receipt of samples: Waters - 3 weeks; Soils - 2 months

☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** (Please check box. →) (Not all tests can be expedited, contact Client Services for more information)

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☐ 3 day (+15%)
☐ 2 day (+30%)
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(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

WO Sticker to go here. (ALS use only)

Comments:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	EP231X - PFAS	EP231X - LL - PFAS (lowlevel)	Lab QC (additional bottles req.) Dup	MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
5652	0990_MW244_250507		07-05-25			X		☐	☐	
5653	0990_QC112_250507					X		☐	☐	
* 5[illegible]	0990_QC212_250507					X		☐	☐	FORWARD → NMI
5654	0990_POT111_250507						X	☐	☐	
6055	0990_MW129_250507					X		☐	☐	
6056	0990_MW149_250507					X		☑	☑	Extra QC
* 6257	0990_MW802D_250507					X		☑	☑	Extra QC
6358	0990_MW802S_250507					X		☐	☐	
6459	0990_MW802I_250507					X		☐	☐	
6560	0990_QC311_250507					X		☐	☐	

Receipt Detail (Lab Use ONLY)	Chilling Method: Ice: Frozen / Melted; Ice Bricks: Frozen / Thawed; None	Sample Temp at Receipt °C °C °C	Security Seal Intact (circle) Yes / No / NA(None)	Carrier Details ☐ Courier/Post ☐ Client	Packaging: (Circle) Hard Esky Foam Esky Box/Bag/Other Count # # #
Relinquished by:	Signature:	Date/Time:	Received by: [redacted]	Signature	Date/Time: 13/5/25 1030
Relinquished by:	Signature:	Date/Time:	Received by: [redacted]	Signature	Date/Time:

Mandatory Fields	CHAIN OF CUSTODY			Page 1 of 8
CLIENT CODE:	*PROJECT MANAGER:	[redacted]	SAMPLER: [redacted]	
*CLIENT: AECOM Australia Pty Ltd	*PM MOBILE:	[redacted]	SAMPLER MOBILE: [redacted]	CoC #: (if applicable)
OFFICE: (Invoiced Office) Darwin, NT	ALS QUOTE # (Client PL if blank)	SY/139/19 V3	PURCHASE ORDER NO.: 60676801/4.02	
PROJECT NO./PROJECT:	NT_0990_PFASOMP_25		SITE: Tindal Biannual GME	
*INVOICE TO: (client default if nil)	[redacted]		☐ CC Invoice to PM	BIOSECURITY
*EMAIL REPORTS TO: (default to PM if blank)	[redacted]			Country of Origin: (if not Australia)

*** STORAGE REQUIREMENTS** Please check box. → Standard Storage time from receipt of samples. Waters - 3 weeks, Soils - 2 months

☑ Standard Storage
☐ Extended Storage — Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** Please check box → (Not all tests can be expedited, contact Client Services for more information)

☑ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

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(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

WO Sticker to go here. (ALS use only)

Comments: To be added to 7 pages submitted on 8/05/25

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	EP231X - PFAS	EP231X - LL - PFAS (lowlevel)										HOLD	Lab QC (additional bottles req.) Dup	MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
61	0990-MW140-250507		07-05-25	2		X												☐	☐	
62	0990-QC104-250507			2		X												☐	☐	
~~X~~	0990-QC204-250507			2		X												☐	☐	PLS FWD TO PM11
63	0990-QC303-250507			2		X												☐	☐	
64	0990-QC403-250507			2													X	☐	☐	
65	0990-MW127_250507			2		X												☐	☐	
66	0990-MW146-250507			2		X												☐	☐	
67	0990_MWB015-250508		08-05-25	4		X												☑	☑	Extra vol lab QC
68	0990-MW134-250508			2		X												☐	☐	
69	0990-MW135-250808			4		X												☑	☑	Extra Vol lab QC

Receipt Detail (Lab Use ONLY)	Chilling Method:	Ice: Frozen / Melted	Ice Bricks: Frozen / Thawed	None	Sample Temp at Receipt	°C	°C	°C	Security Seal Intact (circle)	Yes / No / NA(None)	Carrier Details Con Note #	☐ Courier/Post	☐ Client	Packaging: (Circle) Count	Hard Esky #	Foam Esky #	Box/Bag/Other #

Relinquished by:	Signature:	Date/Time:	Received: [redacted]	Signature: Date/Time: 13/5/25 1030
Relinquished by:	Signature:	Date/Time:	Received: [redacted]	Signature: Date/Time:

2. AHOC

Mandatory Fields	CHAIN OF CUSTODY			Page 1 of 1
CLIENT CODE:	*PROJECT MANAGER: [redacted]	SAMPLER: [redacted]		
*CLIENT: AECOM Australia Pty Ltd	*PM MOBILE: [redacted]	SAMPLER MOBILE: [redacted]		CoC #: (if applicable)
OFFICE: (Invoiced Office) Darwin, NT	ALS QUOTE # (Client PL if blank) SY/139/19 V3	PURCHASE ORDER NO.: 60676801/~~2.bv03.03~~ 4.04		
PROJECT NO./PROJECT: ~~NT_0990_PFASMGMT_25~~ NT-0990-PFASOMP-25		SITE: ~~Tindal Med Perf Monitoring GME~~		
*INVOICE TO: (client default if nil) [redacted]		☐ CC Invoice to PM	BIOSECURITY	
*EMAIL REPORTS TO: (default to PM if blank) [redacted]				

***ANALYSIS REQUIRED**
(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

*** STORAGE REQUIREMENTS**
Please check box. →
Standard Storage time from receipt of samples:
Waters - 3 weeks
Soils - 2 months

☑ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND**
Please check box. →
(Not all tests can be expedited, contact Client Services for more information)

☐ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

Comments:

Environmental Division Sydney
Work Order Reference
ES2513387

Telephone : + 61-2-8784 8555

Subcon / Forward Lab / Split WO
Lab / Analysis: NMI
Organised By / Date:
Relinquished By / Date:
Connote / Courier: QC FWD
WO No: ES2513387
Attached By PO / Internal Sheet:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	EP231X - PFAS	HOLD	Lab QC (additional bottles req.) Dup	MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
1	0990-SW178-250508		08.05.25				X	☐	☐	
2	0990-SW167-250508						X	☐	☐	
3	0990-SW161-250508						X	☐	☐	
4	0990-QC120-250508						X	☐	☐	
~~5~~	0990-QC220-250508						X	☐	☐	PLS FWD TO NMI
5	0990-QC320-250508						X	☐	☐	
6	0990-QC420-250508						X	☐	☐	
7	0990-QC520-250508						X	☐	☐	
								☐	☐	
								☐	☐	

Receipt Detail (Lab Use ONLY)	Chilling Method: Ice: Frozen / Melted	Ice Bricks: Frozen / Thawed	None	Sample Temp at Receipt 3.9 °c 2.5 °c 3.3 °c	Security Seal Intact (circle) Yes / No / NA(None)	Carrier Details ☐ Courier/Post ☐ Client Con Note #	Packaging: (Circle) Hard Esky Foam Esky Box/Bag/Other Count # # #

Relinquished by:	Signature:	Date/Time:	Received by: [redacted]	Signature [redacted]	Date/Time: 2025/5/08
Relinquished by:	Signature:	Date/Time:	Received by: [redacted]	Signature	Date/Time: 13/5/25 1030

PFAS OMP - 2x Wet.

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
GOLD COAST 16 Commerce Drive Direkah QLD 4226 Ph: 07 5471 5659 E: samples.goldcoast@alsglobal.com
MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
MELBOURNE 24 Rodborough Road Doncaster VIC 3108 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
MURDOCH 27 Sydney Road Murdoch WA 6150 Ph: 08 6332 2222 E: murdoch@alsglobal.com
NEW CASTLE 5/585 Maitland Road Tarro NSW 2322 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
NOWRA 2/38 Bomaderry Creek Road Bomaderry NSW 2541 Ph: 02 4421 0300 E: samples.nowra@alsglobal.com
PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: samples.townsville@alsglobal.com
WANGARATTA 27 Sarah Court Wangaratta VIC 3677 Ph: 03 5721 9203 E: samples.wangaratta@alsglobal.com

CLIENT: AECOM	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):
OFFICE: Darwin		
PROJECT: NT_0990_PFASOMP_25	ALS QUOTE NO.: SY/139/19 V3	COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7
ORDER NUMBER: 60676801/1.05.11		
PROJECT MANAGER: [redacted]	CONTACT PH:	
SAMPLER: [redacted]	SAMPLER MOBILE: [redacted]	
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):	
Email Reports to (will default to PM if no other addresses are listed): [redacted]		
Email Invoice to (will default to PM if no other addresses are listed) [redacted]		

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment: 29.3 < 29.9 < 32.1

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
[redacted]	[redacted]		[redacted]
DATE/TIME: 3/4/25	DATE/TIME: 3/4/25 12:15	DATE/TIME:	DATE/TIME: 4/4/25 1330

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED Including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	Please change date to -250401 SAMPLE ID	DATE / TIME 1/4/25	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	WATER - EP231X PFAS - Full Suite (31 analytes)								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	0990_SW140_250402	2/04/2025	w	PFAS bottles	2	X								
2	0990_SW049_250402	2/04/2025	w		2	X								
3	0990_~~SW250~~_250402 SW350	2/04/2025	w		2	X								
4	0990_SW188_250402	2/04/2025	w		2	X								
5	0990_SW016_250402	2/04/2025	w		2	X								
6	0990_SW021_250402	2/04/2025	w		2	X								
7	0990_QC100_250402	2/04/2025	w		2	X								
8	0990_QC200_250402	2/04/2025	w		2	X								
9	0990_QC300_250402	2/04/2025	w		2	X								
10	0990_QC400_250402	2/04/2025	w		2	X								
11	0990_QC500_250402	2/04/2025	w		2	X								
				TOTAL										

Environmental Division Sydney
Work Order Reference
ES2509506
Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Mandatory Fields	CHAIN OF CUSTODY			Page 1 of 1
CLIENT CODE:	*PROJECT MANAGER: [redacted]	SAMPLER: [redacted]		
*CLIENT: AECOM	*PM MOBILE: [redacted]	SAMPLER MOBILE:	400671206	CoC #: (if applicable)
OFFICE: (Invoiced Office) Darwin	ALS QUOTE # (Client PL if blank) SY/139/19 V3	PURCHASE ORDER NO.:	60676801/4.02	
PROJECT NO./PROJECT:	NT_0990_PFASOMP_25	SITE:	Tindal Biannual GME - MW815 Resample	
*INVOICE TO: (client default if nil)	[redacted]		☐ CC Invoice to PM	BIOSECURITY
*EMAIL REPORTS TO: (default to PM if blank)	[redacted]			Country of Origin: (if not Australia)

*** STORAGE REQUIREMENTS** (Please check box →)
- ☒ Standard Storage
- ☐ Extended Storage

Standard Storage time from receipt of samples: Waters - 3 weeks, Soils - 2 months

Specify Disposal Date:

Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** (Please check box →) (Not all tests can be expedited, contact Client Services for more information)
- ☒ 5+ days (no surcharge)
- ☐ 3 day (+15%)
- ☐ 2 day (+30%)
- ☐ 1 day (+50%)

***ANALYSIS REQUIRED**
(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

Comments:

Environmental Division Sydney
Work Order Reference
ES2517036

Telephone : + 61-2-8784 8555

Subcon / Forward Lab / Split WO
Lab / Analysis: NMI
Organised By / Date:
Relinquished By / Date:
Connote / Courier: QC FWD
WO No: ES2517036
Attached By PO / Internal Sheet:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	EP231X PFAS	HOLD	Lab QC (additional bottles req.) Dup	MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
1	0990_MW815_250606		6/06/2025	2	W	X		☐	☐	
2	0990_QC100_250606		6/06/2025	2	W	X		☐	☐	
~~3~~	0990_QC200_250606		6/06/2025	2	W	X		☐	☐	Please forward to NMI for analysis
4	0990_QC300_250606		6/06/2025	2	W	X		☐	☐	
5	0990_QC400_250606		6/06/2025	2	W		X	☐	☐	
6	0990_QC500_250606		6/06/2025	2	W		X	☐	☐	
								☐	☐	
								☐	☐	
								☐	☐	
								☐	☐	

Receipt Detail (Lab Use ONLY)
Chilling Method: Ice: Frozen / Melted; Ice Bricks: Frozen / Thawed; None [redacted]
Sample Temp at °C °C °C
Security Seal Intact (circle) Yes / No / NA(None)
Carrier Details ☐ Courier/Post ☐ Client [redacted]
Packaging: (Circle) Hard Esky Foam Esky Box/Bag/Other
Count # # #

Relinquished by: [redacted] Signature [redacted] Date/Time: 6/06/2025 12:55pm
Received [redacted] Signature [redacted] Date/Time: 6/6/25 12:55pm
Relinquished by: [redacted] Signature [redacted] Date/Time:
Received [redacted] Signature [redacted] Date/Time:

Appendix G

Lab Reports

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2504689**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	[redacted]
Contact	: [redacted]	Contact	
Address	: GPO BOX 3175 DARWIN NT, AUSTRALIA 0801	Address	
E-mail	: [redacted]	E-mail	
Telephone	: ----	Telephone	
Facsimile	: ----	Facsimile	
Project	: NT_0990_PFASOMP_25	Page	: 1 of 3
Order number	: 60676801 / 7.03.01	Quote number	: ES2019AECOMAU0030 (SY/139/19 V3)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PP & Cossack GME		
Sampler	: [redacted]		

Dates

Date Samples Received	: 20-Feb-2025 11:30	Issue Date	: 21-Feb-2025
Client Requested Due Date	: 26-Feb-2025	Scheduled Reporting Date	: **26-Feb-2025**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 5.8'C 12.9'C 11.8'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 32 / 32

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- 21/02/2025 - This is an updated SRN which indicates the addition of analysis to extra samples as per client instructions.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **QC Forward analysis will be conducted by NMI.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (31 analytes)	WATER - EP231X-LL PFAS - Full Suite (31 analytes) Low Level
ES2504689-001	17-Feb-2025 00:00	0990_POT112_250217	✓	
ES2504689-002	17-Feb-2025 00:00	0990_POT128_250217		✓
ES2504689-003	17-Feb-2025 00:00	0990_POT113_250217	✓	
ES2504689-004	17-Feb-2025 00:00	0990_POT129_250217		✓
ES2504689-005	17-Feb-2025 00:00	0990_OTH119_250217		✓
ES2504689-006	17-Feb-2025 00:00	0990_POT126_250217		✓
ES2504689-007	17-Feb-2025 00:00	0990_POT131_250217		✓
ES2504689-008	17-Feb-2025 00:00	0990_OTH117_250217		✓
ES2504689-009	17-Feb-2025 00:00	0990_POT125_250217		✓
ES2504689-010	17-Feb-2025 00:00	0990_POT130_250217		✓
ES2504689-011	17-Feb-2025 00:00	0990_POT120_250217	✓	
ES2504689-012	17-Feb-2025 00:00	0990_POT121_250217	✓	
ES2504689-013	17-Feb-2025 00:00	0990_POT201_250217	✓	
ES2504689-014	17-Feb-2025 00:00	0990_POT198_250217		✓
ES2504689-015	17-Feb-2025 00:00	0990_OTH118_250217		✓
ES2504689-016	17-Feb-2025 00:00	0990_POT127_250217		✓
ES2504689-017	17-Feb-2025 00:00	0990_QC100_250217	✓	
ES2504689-018	17-Feb-2025 00:00	0990_QC300_250217	✓	
ES2504689-019	17-Feb-2025 00:00	0990_QC400_250217	✓	
ES2504689-020	17-Feb-2025 00:00	0990_QC500_250217	✓	
ES2504689-021	17-Feb-2025 00:00	0990_QC101_250217	✓	
ES2504689-022	17-Feb-2025 00:00	0990_QC301_250217	✓	
ES2504689-023	17-Feb-2025 00:00	0990_QC401_250217	✓	
ES2504689-024	17-Feb-2025 00:00	0990_MW808_250217	✓	
ES2504689-025	17-Feb-2025 00:00	0990_MW809_250217	✓	
ES2504689-026	17-Feb-2025 00:00	0990_MW910_250217	✓	
ES2504689-027	17-Feb-2025 00:00	0990_MW811_250217	✓	
ES2504689-028	17-Feb-2025 00:00	0990_MW812_250217	✓	
ES2504689-029	17-Feb-2025 00:00	0990_QC102_250217	✓	
ES2504689-030	17-Feb-2025 00:00	0990_MW813_250217	✓	
ES2504689-031	17-Feb-2025 00:00	0990_POT114_250217	✓	
ES2504689-032	17-Feb-2025 00:00	0990_POT124_250217		✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com
[redacted]		
- *AU Certificate of Analysis - NATA (COA)	Email	[redacted]
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ESDAT (ESDAT)	Email	
[redacted]		
- *AU Certificate of Analysis - NATA (COA)	Email	
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ESDAT (ESDAT)	Email	
DERP ESDAT REPORTS		
- EDI Format - ESDAT (ESDAT)	Email	
esdat.apac esdat.apac		
- EDI Format - ESDAT (ESDAT)	Email	
[redacted]		
- *AU Certificate of Analysis - NATA (COA)	Email	
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ESDAT (ESDAT)	Email	
[redacted]		
- *AU Certificate of Analysis - NATA (COA)	Email	
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ESDAT (ESDAT)	Email	
[redacted]		
- *AU Certificate of Analysis - NATA (COA)	Email	
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ESDAT (ESDAT)	Email	
[redacted]		
- *AU Certificate of Analysis - NATA (COA)	Email	
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ESDAT (ESDAT)	Email	

CERTIFICATE OF ANALYSIS

Work Order	: **ES2504689**	Page	: 1 of 25
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	[redacted]
Contact	: [redacted]	Contact	
Address	:	Address	
Telephone	: ----	Telephone	
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 20-Feb-2025 11:30
Order number	: 60676801 / 7.03.01	Date Analysis Commenced	: 21-Feb-2025
C-O-C number	: ----	Issue Date	: 26-Feb-2025 13:18
Sampler	: [redacted]		
Site	: PP & Cossack GME		
Quote number	: SY/139/19 V3		
No. of samples received	: 32		
No. of samples analysed	: 32		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_250217	0990_POT128_250217	0990_POT113_250217	0990_POT129_250217	0990_OTH119_250217
			Sampling date / time	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	ES2504689-001	ES2504689-002	ES2504689-003	ES2504689-004	ES2504689-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	----	**0.051**	----	<0.002	<0.002
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	----	**0.050**	----	<0.002	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	----	**0.247**	----	**0.010**	**0.004**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	----	**0.008**	----	<0.002	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.02**	----	<0.01	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	----	**0.251**	----	**0.015**	**0.013**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.03**	----	<0.01	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	<0.02	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	----	**0.02**	----	<0.01	<0.01
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	<0.1	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	----	**0.024**	----	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	----	**0.112**	----	<0.002	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	----	**0.009**	----	<0.002	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	<0.02	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_250217	0990_POT128_250217	0990_POT113_250217	0990_POT129_250217	0990_OTH119_250217
			Sampling date / time	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	ES2504689-001	ES2504689-002	ES2504689-003	ES2504689-004	ES2504689-005
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	----	**0.017**	----	<0.002	**0.003**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	<0.01	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	----	<0.005	----	<0.005	<0.005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	<0.05	----	----
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	----	<0.005	----	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	<0.02	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	----	<0.005	----	<0.005	<0.005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	<0.05	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_250217	0990_POT128_250217	0990_POT113_250217	0990_POT129_250217	0990_OTH119_250217
			Sampling date / time	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	ES2504689-001	ES2504689-002	ES2504689-003	ES2504689-004	ES2504689-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	----	<0.005	----	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	----	<0.005	----	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	<0.05	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	----	<0.005	----	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	----	<0.002	----	<0.002	<0.002
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	<0.02	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	----	<0.002	----	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	<0.02	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	----	<0.005	----	<0.005	<0.005
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	<0.05	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	----	<0.005	----	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	<0.05	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	----	<0.005	----	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_250217	0990_POT128_250217	0990_POT113_250217	0990_POT129_250217	0990_OTH119_250217
			Sampling date / time	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	ES2504689-001	ES2504689-002	ES2504689-003	ES2504689-004	ES2504689-005
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	<0.05	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	----	<0.005	----	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	<0.05	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	----	0.809	----	0.025	0.020
Sum of PFAS	----	0.01	µg/L	0.05	----	<0.01	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	----	0.498	----	0.025	0.017
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.05	----	<0.01	----	----
Sum of PFAS (WA DER List)	----	0.002	µg/L	----	0.731	----	0.025	0.020
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.05	----	<0.01	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	----	110	----	104	100
13C4-PFOS	----	0.02	%	103	----	102	----	----
13C8-PFOA	----	0.002	%	----	109	----	110	108
13C8-PFOA	----	0.02	%	95.8	----	93.2	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT126_250217	0990_POT131_250217	0990_OTH117_250217	0990_POT125_250217	0990_POT130_250217
			Sampling date / time	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	ES2504689-006	ES2504689-007	ES2504689-008	ES2504689-009	ES2504689-010
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	<0.002	**0.012**	**0.003**	<0.002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	<0.002	**0.101**	**0.004**	<0.002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT126_250217	0990_POT131_250217	0990_OTH117_250217	0990_POT125_250217	0990_POT130_250217
			Sampling date / time	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	ES2504689-006	ES2504689-007	ES2504689-008	ES2504689-009	ES2504689-010
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	**0.030**	<0.005	<0.005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	<0.002	<0.002	**0.143**	**0.007**	<0.002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	<0.002	<0.002	**0.113**	**0.007**	<0.002
Sum of PFAS (WA DER List)	----	0.002	µg/L	<0.002	<0.002	**0.143**	**0.007**	<0.002
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**107**	**110**	**108**	**107**	**110**
13C8-PFOA	----	0.002	%	**108**	**111**	**112**	**108**	**113**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT120_250217	0990_POT121_250217	0990_POT201_250217	0990_POT198_250217	0990_OTH118_250217
			Sampling date / time	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	ES2504689-011	ES2504689-012	ES2504689-013	ES2504689-014	ES2504689-015
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	----	----	----	<0.002	<0.002
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	----	----	----	<0.002	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	----	----	----	<0.002	<0.002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	----	----	----	<0.002	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.02**	**0.01**	<0.01	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	----	----	----	<0.002	<0.002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.03**	**0.02**	<0.01	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	----	----	----	<0.002	<0.002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	----	----	----	<0.01	<0.01
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	----	----	----	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	----	----	----	<0.002	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	----	----	----	<0.002	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT120_250217	0990_POT121_250217	0990_POT201_250217	0990_POT198_250217	0990_OTH118_250217
			Sampling date / time	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	ES2504689-011	ES2504689-012	ES2504689-013	ES2504689-014	ES2504689-015
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	----	----	----	<0.002	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	----	----	----	<0.002	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	----	----	----	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	----	----	----	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	----	----	----	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	----	----	----	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	----	----	----	<0.005	<0.005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	----	----	----	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	----	----	----	<0.002	<0.002
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	----	----	----	<0.005	<0.005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT120_250217	0990_POT121_250217	0990_POT201_250217	0990_POT198_250217	0990_OTH118_250217
			Sampling date / time	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	ES2504689-011	ES2504689-012	ES2504689-013	ES2504689-014	ES2504689-015
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	----	----	----	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	----	----	----	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	----	----	----	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	----	----	----	<0.002	<0.002
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	----	----	----	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	----	----	----	<0.005	<0.005
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	----	----	----	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	----	----	----	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT120_250217	0990_POT121_250217	0990_POT201_250217	0990_POT198_250217	0990_OTH118_250217
			Sampling date / time	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	ES2504689-011	ES2504689-012	ES2504689-013	ES2504689-014	ES2504689-015
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	----	----	----	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	----	----	----	<0.002	<0.002
Sum of PFAS	----	0.01	µg/L	**0.05**	**0.03**	<0.01	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	----	----	----	<0.002	<0.002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.05**	**0.03**	<0.01	----	----
Sum of PFAS (WA DER List)	----	0.002	µg/L	----	----	----	<0.002	<0.002
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.05**	**0.03**	<0.01	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	----	----	----	**107**	**102**
13C4-PFOS	----	0.02	%	**103**	**102**	**99.4**	----	----
13C8-PFOA	----	0.002	%	----	----	----	**114**	**109**
13C8-PFOA	----	0.02	%	**91.7**	**95.6**	**96.7**	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT127_250217	0990_QC100_250217	0990_QC300_250217	0990_QC400_250217	0990_QC500_250217
			Sampling date / time	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	ES2504689-016	ES2504689-017	ES2504689-018	ES2504689-019	ES2504689-020
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	----	----	----	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	----	**0.02**	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	**0.03**	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	----	----	----	----
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT127_250217	0990_QC100_250217	0990_QC300_250217	0990_QC400_250217	0990_QC500_250217
			Sampling date / time	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	ES2504689-016	ES2504689-017	ES2504689-018	ES2504689-019	ES2504689-020
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	----	----	----	----
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT127_250217	0990_QC100_250217	0990_QC300_250217	0990_QC400_250217	0990_QC500_250217
			Sampling date / time	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	ES2504689-016	ES2504689-017	ES2504689-018	ES2504689-019	ES2504689-020
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	----	----	----	----
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT127_250217	0990_QC100_250217	0990_QC300_250217	0990_QC400_250217	0990_QC500_250217
			Sampling date / time	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	ES2504689-016	ES2504689-017	ES2504689-018	ES2504689-019	ES2504689-020
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	<0.002	----	----	----	----
Sum of PFAS	----	0.01	µg/L	----	**0.05**	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	<0.002	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	**0.05**	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.002	µg/L	<0.002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	**0.05**	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**108**	----	----	----	----
13C4-PFOS	----	0.02	%	----	**95.5**	**101**	**104**	**106**
13C8-PFOA	----	0.002	%	**109**	----	----	----	----
13C8-PFOA	----	0.02	%	----	**94.2**	**97.5**	**93.8**	**101**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC101_250217	0990_QC301_250217	0990_QC401_250217	0990_MW808_250217	0990_MW809_250217
			Sampling date / time	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	ES2504689-021	ES2504689-022	ES2504689-023	ES2504689-024	ES2504689-025
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	**0.06**	**0.02**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	**0.02**	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	**0.54**	**0.38**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC101_250217	0990_QC301_250217	0990_QC401_250217	0990_MW808_250217	0990_MW809_250217
			Sampling date / time	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	ES2504689-021	ES2504689-022	ES2504689-023	ES2504689-024	ES2504689-025
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	**0.62**	**0.40**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	**0.60**	**0.40**
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	**0.60**	**0.40**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**108**	**103**	**106**	**106**	**109**
13C8-PFOA	----	0.02	%	**101**	**100**	**103**	**102**	**104**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW910_250217	0990_MW811_250217	0990_MW812_250217	0990_QC102_250217	0990_MW813_250217
			Sampling date / time	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	ES2504689-026	ES2504689-027	ES2504689-028	ES2504689-029	ES2504689-030
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**0.03**	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**0.02**	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.11**	**0.06**	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.05**	**0.12**	**0.02**	<0.01	**0.01**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**0.05**	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW910_250217	0990_MW811_250217	0990_MW812_250217	0990_QC102_250217	0990_MW813_250217
			Sampling date / time	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00	17-Feb-2025 00:00
Compound	CAS Number	LOR	Unit	ES2504689-026	ES2504689-027	ES2504689-028	ES2504689-029	ES2504689-030
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.26**	**0.18**	**0.02**	<0.01	**0.01**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.16**	**0.18**	**0.02**	<0.01	**0.01**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.24**	**0.18**	**0.02**	<0.01	**0.01**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**107**	**101**	**105**	**101**	**101**
13C8-PFOA	----	0.02	%	**100**	**100**	**103**	**105**	**107**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT114_250217	0990_POT124_250217	----	----	----
			Sampling date / time	17-Feb-2025 00:00	17-Feb-2025 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2504689-031	ES2504689-032	--------	--------	--------
				Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	----	<0.002	----	----	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	----	**0.002**	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	----	**0.022**	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	----	<0.002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	----	**0.033**	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	----	<0.002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	----	<0.01	----	----	----
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	----	<0.002	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	----	<0.002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	----	<0.002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT114_250217	0990_POT124_250217	----	----	----
			Sampling date / time	17-Feb-2025 00:00	17-Feb-2025 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2504689-031	ES2504689-032	--------	--------	--------
				Result	Result	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	----	<0.002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	----	<0.002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	----	<0.002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	----	<0.002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	----	<0.002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	----	<0.002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	----	<0.005	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	----	<0.005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	----	<0.002	----	----	----
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	----	<0.005	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT114_250217	0990_POT124_250217	----	----	----
			Sampling date / time	17-Feb-2025 00:00	17-Feb-2025 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2504689-031	ES2504689-032	--------	--------	--------
				Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	----	<0.005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	----	<0.005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	----	<0.005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	----	<0.002	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	----	<0.002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	----	<0.005	----	----	----
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	----	<0.005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	----	<0.005	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT114_250217	0990_POT124_250217	----	----	----
			Sampling date / time	17-Feb-2025 00:00	17-Feb-2025 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2504689-031	ES2504689-032	--------	--------	--------
				Result	Result	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	----	<0.005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	----	**0.057**	----	----	----
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	----	**0.055**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.002	µg/L	----	**0.055**	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	----	**112**	----	----	----
13C4-PFOS	----	0.02	%	**103**	----	----	----	----
13C8-PFOA	----	0.002	%	----	**105**	----	----	----
13C8-PFOA	----	0.02	%	**111**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2504689**	Page	: 1 of 19
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	[redacted]
Contact	: [redacted]	Contact	
Address	[redacted]	Address	
Telephone	: ----	Telephone	
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 20-Feb-2025
Order number	: 60676801 / 7.03.01	Date Analysis Commenced	: 21-Feb-2025
C-O-C number	: ----	Issue Date	: 26-Feb-2025
Sampler	: [redacted]		
Site	: PP & Cossack GME		
Quote number	: SY/139/19 V3		
No. of samples received	: 32		
No. of samples analysed	: 32		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6390791)									
ES2504675-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 (0.50)*	µg/L	56.6	49.3	13.7	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 (0.50)*	µg/L	78.9	72.7	8.2	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02 (0.05)*	µg/L	15.6	14.8	5.6	0% - 20%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02 (0.05)*	µg/L	9.39	8.58	9.0	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02 (0.05)*	µg/L	7.24	6.60	9.2	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6390792)									
ED2500249-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 (0.05)*	µg/L	1.39	1.23	11.9	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 (0.05)*	µg/L	1.71	1.70	0.7	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02 (0.05)*	µg/L	10.3	11.0	6.5	0% - 20%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
ED2500249-002	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 (0.05)*	µg/L	0.28	0.21	28.7	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02 (0.05)*	µg/L	4.30	4.51	4.7	0% - 20%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6391654)									

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6391654) - continued									
ES2504689-015	0990_OTH118_250217	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	0.0	No Limit
ES2504846-005	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	0.791	0.772	2.5	0% - 20%
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	0.445	0.446	0.0	0% - 20%
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	3.48	3.63	4.1	0% - 20%
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	0.091	0.090	2.0	0% - 20%
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	0.926	1.07	14.5	0% - 20%
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6392495)									
ES2504727-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2504738-002	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.16	0.18	13.9	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.11	0.11	0.0	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6390791)									
ES2504675-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 (0.05)*	µg/L	12.7	11.4	10.3	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02 (0.05)*	µg/L	9.43	8.62	9.0	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02 (0.05)*	µg/L	30.6	27.2	11.7	0% - 20%

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6390791) - continued									
ES2504675-001	Anonymous	EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02 (0.05)*	µg/L	6.14	5.71	7.3	0% - 20%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02 (0.05)*	µg/L	0.39	0.36	6.5	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1 (0.2)*	µg/L	7.4	6.7	9.8	0% - 20%
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6390792)									
ED2500249-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 (0.05)*	µg/L	7.07	7.16	1.2	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02 (0.05)*	µg/L	1.79	1.78	0.0	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02 (0.05)*	µg/L	4.46	4.52	1.3	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02 (0.05)*	µg/L	0.79	0.75	5.1	0% - 50%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02 (0.05)*	µg/L	0.28	0.31	9.8	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02 (0.05)*	µg/L	0.20	0.19	6.2	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1 (0.2)*	µg/L	<0.2	<0.2	0.0	No Limit
ED2500249-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 (0.05)*	µg/L	0.52	0.53	0.0	0% - 50%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02 (0.05)*	µg/L	1.33	1.34	1.2	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02 (0.05)*	µg/L	1.78	1.73	2.7	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02 (0.05)*	µg/L	0.21	<0.05	122	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1 (0.2)*	µg/L	1.3	1.8	31.9	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6391654)									
ES2504689-015	0990_OTH118_250217	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6391654) - continued									
ES2504689-015	0990_OTH118_250217	EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2504846-005	Anonymous	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	0.498	0.503	1.0	0% - 20%
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	1.06	1.16	9.0	0% - 20%
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	0.150	0.165	9.0	0% - 20%
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	0.216	0.242	11.2	0% - 20%
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	0.006	0.006	0.0	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	0.21	0.22	7.1	0% - 20%
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6392495)									
ES2504727-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2504738-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.04	0.05	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6392495) - continued									
ES2504738-002	Anonymous	EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6390791)									
ES2504675-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6390792)									
ED2500249-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02 (0.05)*	µg/L	0.09	0.09	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
ED2500249-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6390792) - continued									
ED2500249-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6391654)									
ES2504689-015	0990_OTH118_250217	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
ES2504846-005	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6392495)									
ES2504727-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6392495) - continued									
ES2504727-003	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2504738-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6390791)									
ES2504675-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	0.15	0.14	10.3	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6390792)									
ED2500249-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	2.63	2.43	8.2	0% - 20%
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.09	60.6	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6390792) - continued									
ED2500249-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6391654)									
ES2504689-015	0990_OTH118_250217	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.0	No Limit
ES2504846-005	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6392495)									
ES2504727-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2504738-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6392495) - continued									
ES2504738-002	Anonymous	EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6390791)									
ES2504675-001	Anonymous	EP231X: Sum of PFAS	----	0.01 (0.05)*	µg/L	242	219	9.9	0% - 20%
EP231P: PFAS Sums (QC Lot: 6390792)									
ED2500249-001	Anonymous	EP231X: Sum of PFAS	----	0.01 (0.05)*	µg/L	30.7	31.2	1.7	0% - 20%
ED2500249-002	Anonymous	EP231X: Sum of PFAS	----	0.01 (0.05)*	µg/L	9.72	10.1	4.0	0% - 20%
EP231P: PFAS Sums (QC Lot: 6392495)									
ES2504727-003	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	0.01	0.0	No Limit
ES2504738-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.33	0.36	8.7	0% - 20%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6390791)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	86.6	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	99.1	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	91.5	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	98.1	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	96.5	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	90.6	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6390792)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	75.5	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	85.5	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	81.2	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	86.5	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	81.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	90.6	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6391654)								
EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	0.025 µg/L	98.4	72.0	130
EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	0.025 µg/L	116	71.0	127
EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	0.025 µg/L	119	68.0	131
EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	0.025 µg/L	128	69.0	134
EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	0.025 µg/L	121	65.0	140
EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	0.025 µg/L	92.4	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6392495)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	88.9	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	105	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	91.2	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	107	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	93.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	91.2	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6393869)								
EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	0.025 µg/L	84.2	72.0	130
EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	0.025 µg/L	82.7	71.0	127

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6393869) - continued								
EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	0.025 µg/L	81.6	68.0	131
EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	0.025 µg/L	108	69.0	134
EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	0.025 µg/L	89.5	65.0	140
EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	0.025 µg/L	73.1	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6390791)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	97.5	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	94.4	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	86.9	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	96.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	95.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	96.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	102	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	103	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	90.3	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	101	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6390792)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	85.4	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	85.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	83.7	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	82.2	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	93.0	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	85.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	87.4	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	91.4	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	77.7	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	96.7	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6391654)								
EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	0.125 µg/L	104	73.0	129
EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.025 µg/L	107	72.0	129
EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	0.025 µg/L	93.2	72.0	129
EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	0.025 µg/L	95.9	72.0	130
EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	0.025 µg/L	110	71.0	133

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6391654) - continued								
EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	0.025 µg/L	108	69.0	130
EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	0.025 µg/L	106	71.0	129
EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	0.025 µg/L	106	69.0	133
EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	0.025 µg/L	112	72.0	134
EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	0.025 µg/L	107	65.0	144
EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	0.0625 µg/L	101	71.0	132
EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	0.025 µg/L	109	65.6	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6392495)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	98.0	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	98.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	93.6	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	106	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	105	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	100	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	107	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	99.1	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6393869)								
EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	0.125 µg/L	93.8	73.0	129
EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.025 µg/L	88.8	72.0	129
EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	0.025 µg/L	79.2	72.0	129
EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	0.025 µg/L	89.2	72.0	130
EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	0.025 µg/L	97.1	71.0	133
EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	0.025 µg/L	94.4	69.0	130
EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	0.025 µg/L	92.3	71.0	129
EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	0.025 µg/L	102	69.0	133
EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	0.025 µg/L	104	72.0	134
EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	0.025 µg/L	74.1	65.0	144
EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	0.0625 µg/L	85.2	71.0	132
EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	0.025 µg/L	102	65.6	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6390791)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	108	67.0	137

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6390791) - continued								
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	94.8	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	99.6	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.9	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	94.2	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	101	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	84.0	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6390792)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	87.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	93.6	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	90.7	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	88.4	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	87.5	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	80.4	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	79.8	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6391654)								
EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	0.025 µg/L	106	67.0	137
EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	0.0625 µg/L	99.3	68.0	141
EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	0.0625 µg/L	99.5	61.1	139
EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	0.0625 µg/L	96.2	72.3	128
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	0.0625 µg/L	105	63.2	134
EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	0.025 µg/L	108	65.0	136
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	0.025 µg/L	97.0	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6392495)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	93.4	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	107	68.0	141

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6392495) - continued								
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	96.8	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	84.1	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	113	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	93.9	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	100	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6393869)								
EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	0.025 µg/L	96.7	67.0	137
EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	0.0625 µg/L	105	68.0	141
EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	0.0625 µg/L	101	61.1	139
EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	0.0625 µg/L	97.8	72.3	128
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	0.0625 µg/L	96.1	63.2	134
EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	0.025 µg/L	91.0	65.0	136
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	0.025 µg/L	82.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6390791)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	98.6	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	100	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	101	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	100	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6390792)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	75.3	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	109	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	89.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	125	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6391654)								
EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	0.025 µg/L	83.7	63.0	143
EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	0.025 µg/L	120	64.0	140
EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	0.025 µg/L	105	67.0	138
EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	0.025 µg/L	101	75.2	137

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6392495)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	108	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	107	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	103	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	116	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6393869)								
EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	0.025 µg/L	93.1	63.0	143
EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	0.025 µg/L	86.7	64.0	140
EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	0.025 µg/L	100	67.0	138
EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	0.025 µg/L	77.0	75.2	137

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6390792)							
ED2500249-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	76.5	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	89.3	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	87.1	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	87.7	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	86.5	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	92.4	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6391654)							
ES2504732-001	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.025 µg/L	97.8	72.0	130
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.025 µg/L	95.0	71.0	127
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.025 µg/L	92.9	68.0	131
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.025 µg/L	115	69.0	134
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.025 µg/L	114	65.0	140
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.025 µg/L	72.7	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6392495)							
ES2504729-008	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	87.1	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	95.4	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	87.7	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	111	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	93.3	65.0	140

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6392495) - continued							
ES2504729-008	Anonymous	EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	88.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6390792)							
ED2500249-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	87.3	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	88.7	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	86.0	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	88.4	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	97.1	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	85.5	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	93.3	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	98.1	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	103	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	91.7	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	104	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6391654)							
ES2504732-001	Anonymous	EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.125 µg/L	106	73.0	129
		EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.025 µg/L	114	72.0	129
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.025 µg/L	124	72.0	129
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.025 µg/L	110	72.0	130
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.025 µg/L	115	71.0	133
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.025 µg/L	114	69.0	130
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.025 µg/L	114	71.0	129
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.025 µg/L	107	69.0	133
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.025 µg/L	113	72.0	134
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.025 µg/L	85.4	65.0	144
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0625 µg/L	109	71.0	132
		EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.025 µg/L	107	65.6	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6392495)							
ES2504729-008	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	96.0	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	115	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	98.5	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	90.4	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	107	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	97.6	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	102	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	96.0	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	109	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	91.6	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	106	71.0	132

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6390792)							
ED2500249-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	89.5	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	92.8	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	96.9	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	89.5	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	103	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	84.7	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	81.7	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6391654)							
ES2504732-001	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.025 µg/L	111	67.0	137
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0625 µg/L	93.0	68.0	141
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0625 µg/L	106	61.1	139
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0625 µg/L	99.0	72.3	128
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0625 µg/L	109	63.2	134
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.025 µg/L	112	65.0	136
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.025 µg/L	107	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6392495)							
ES2504729-008	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	94.3	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	92.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	104	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	86.3	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	105	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	97.1	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	101	61.0	135

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6390792)							
ED2500249-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	85.3	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	108	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	87.3	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	119	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6391654)							
ES2504732-001	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.025 µg/L	116	63.0	143
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.025 µg/L	111	64.0	140
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.025 µg/L	108	67.0	138
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.025 µg/L	91.2	75.2	137
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6392495)							
ES2504729-008	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	101	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	113	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	101	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	92.6	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2504689**	Page	: 1 of 8
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 20-Feb-2025
Site	: PP & Cossack GME	Issue Date	: 26-Feb-2025
Sampler	: [redacted]	No. of samples received	: 32
Order number	: 60676801 / 7.03.01	No. of samples analysed	: 32

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	47	4.26	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0990_QC500_250217,	0990_QC101_250217,	**17-Feb-2025**	**21-Feb-2025**	16-Aug-2025	✓	**24-Feb-2025**	16-Aug-2025	✓
0990_QC301_250217,	0990_QC401_250217,							
0990_MW808_250217,	0990_MW809_250217,							
0990_MW910_250217,	0990_MW811_250217,							
0990_MW812_250217,	0990_QC102_250217,							
0990_MW813_250217								
HDPE (no PTFE) (EP231X)								
0990_POT114_250217		**17-Feb-2025**	**21-Feb-2025**	16-Aug-2025	✓	**25-Feb-2025**	16-Aug-2025	✓
HDPE (no PTFE) (EP231X)								
0990_POT112_250217,	0990_POT128_250217,	**17-Feb-2025**	**21-Feb-2025**	16-Aug-2025	✓	**26-Feb-2025**	16-Aug-2025	✓
0990_POT113_250217,	0990_POT129_250217,							
0990_OTH119_250217,	0990_POT126_250217,							
0990_POT131_250217,	0990_OTH117_250217,							
0990_POT125_250217,	0990_POT130_250217,							
0990_POT120_250217,	0990_POT121_250217,							
0990_POT201_250217,	0990_POT198_250217,							
0990_OTH118_250217,	0990_POT127_250217,							
0990_QC100_250217,	0990_QC300_250217,							
0990_QC400_250217								
HDPE (no PTFE) (EP231X-LL)								
0990_POT124_250217		**17-Feb-2025**	**24-Feb-2025**	16-Aug-2025	✓	**25-Feb-2025**	16-Aug-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_QC500_250217, 0990_QC101_250217, 0990_QC301_250217, 0990_QC401_250217, 0990_MW808_250217, 0990_MW809_250217, 0990_MW910_250217, 0990_MW811_250217, 0990_MW812_250217, 0990_QC102_250217, 0990_MW813_250217	**17-Feb-2025**	**21-Feb-2025**	16-Aug-2025	✓	**24-Feb-2025**	16-Aug-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT114_250217	**17-Feb-2025**	**21-Feb-2025**	16-Aug-2025	✓	**25-Feb-2025**	16-Aug-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT112_250217, 0990_POT128_250217, 0990_POT113_250217, 0990_POT129_250217, 0990_OTH119_250217, 0990_POT126_250217, 0990_POT131_250217, 0990_OTH117_250217, 0990_POT125_250217, 0990_POT130_250217, 0990_POT120_250217, 0990_POT121_250217, 0990_POT201_250217, 0990_POT198_250217, 0990_OTH118_250217, 0990_POT127_250217, 0990_QC100_250217, 0990_QC300_250217, 0990_QC400_250217	**17-Feb-2025**	**21-Feb-2025**	16-Aug-2025	✓	**26-Feb-2025**	16-Aug-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT124_250217	**17-Feb-2025**	**24-Feb-2025**	16-Aug-2025	✓	**25-Feb-2025**	16-Aug-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_QC500_250217, 0990_QC101_250217, 0990_QC301_250217, 0990_QC401_250217, 0990_MW808_250217, 0990_MW809_250217, 0990_MW910_250217, 0990_MW811_250217, 0990_MW812_250217, 0990_QC102_250217, 0990_MW813_250217	**17-Feb-2025**	**21-Feb-2025**	16-Aug-2025	✓	**24-Feb-2025**	16-Aug-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT114_250217	**17-Feb-2025**	**21-Feb-2025**	16-Aug-2025	✓	**25-Feb-2025**	16-Aug-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT112_250217, 0990_POT128_250217, 0990_POT113_250217, 0990_POT129_250217, 0990_OTH119_250217, 0990_POT126_250217, 0990_POT131_250217, 0990_OTH117_250217, 0990_POT125_250217, 0990_POT130_250217, 0990_POT120_250217, 0990_POT121_250217, 0990_POT201_250217, 0990_POT198_250217, 0990_OTH118_250217, 0990_POT127_250217, 0990_QC100_250217, 0990_QC300_250217, 0990_QC400_250217	**17-Feb-2025**	**21-Feb-2025**	16-Aug-2025	✓	**26-Feb-2025**	16-Aug-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT124_250217	**17-Feb-2025**	**24-Feb-2025**	16-Aug-2025	✓	**25-Feb-2025**	16-Aug-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_QC500_250217, 0990_QC101_250217, 0990_QC301_250217, 0990_QC401_250217, 0990_MW808_250217, 0990_MW809_250217, 0990_MW910_250217, 0990_MW811_250217, 0990_MW812_250217, 0990_QC102_250217, 0990_MW813_250217	**17-Feb-2025**	**21-Feb-2025**	16-Aug-2025	✓	**24-Feb-2025**	16-Aug-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT114_250217	**17-Feb-2025**	**21-Feb-2025**	16-Aug-2025	✓	**25-Feb-2025**	16-Aug-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT112_250217, 0990_POT128_250217, 0990_POT113_250217, 0990_POT129_250217, 0990_OTH119_250217, 0990_POT126_250217, 0990_POT131_250217, 0990_OTH117_250217, 0990_POT125_250217, 0990_POT130_250217, 0990_POT120_250217, 0990_POT121_250217, 0990_POT201_250217, 0990_POT198_250217, 0990_OTH118_250217, 0990_POT127_250217, 0990_QC100_250217, 0990_QC300_250217, 0990_QC400_250217	**17-Feb-2025**	**21-Feb-2025**	16-Aug-2025	✓	**26-Feb-2025**	16-Aug-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT124_250217	**17-Feb-2025**	**24-Feb-2025**	16-Aug-2025	✓	**25-Feb-2025**	16-Aug-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_QC500_250217, 0990_QC101_250217, 0990_QC301_250217, 0990_QC401_250217, 0990_MW808_250217, 0990_MW809_250217, 0990_MW910_250217, 0990_MW811_250217, 0990_MW812_250217, 0990_QC102_250217, 0990_MW813_250217	**17-Feb-2025**	**21-Feb-2025**	16-Aug-2025	✓	**24-Feb-2025**	16-Aug-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT114_250217	**17-Feb-2025**	**21-Feb-2025**	16-Aug-2025	✓	**25-Feb-2025**	16-Aug-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT112_250217, 0990_POT128_250217, 0990_POT113_250217, 0990_POT129_250217, 0990_OTH119_250217, 0990_POT126_250217, 0990_POT131_250217, 0990_OTH117_250217, 0990_POT125_250217, 0990_POT130_250217, 0990_POT120_250217, 0990_POT121_250217, 0990_POT201_250217, 0990_POT198_250217, 0990_OTH118_250217, 0990_POT127_250217, 0990_QC100_250217, 0990_QC300_250217, 0990_QC400_250217	**17-Feb-2025**	**21-Feb-2025**	16-Aug-2025	✓	**26-Feb-2025**	16-Aug-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT124_250217	**17-Feb-2025**	**24-Feb-2025**	16-Aug-2025	✓	**25-Feb-2025**	16-Aug-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	5	47	**10.64**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	2	20	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	47	**6.38**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	2	20	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	47	**6.38**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	47	**4.26**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is concentrated, combined with an equal volume of reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2508368**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted] DARWIN NT, AUSTRALIA 0801	Address	: [redacted]
E-mail	: [redacted]@aecom.com	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_25	Page	: 1 of 3
Order number	: 60676801/1.05.11	Quote number	: ES2019AECOMAU0030 (SY/139/19 V3)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [redacted]		

Dates

Date Samples Received	: 26-Mar-2025 11:00	Issue Date	: 27-Mar-2025
Client Requested Due Date	: 31-Mar-2025	Scheduled Reporting Date	: **28-Mar-2025**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 28.0'C 27.9'C 27.0'C DRW 16.5'C 16.4'C 15.3'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 4 / 4

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- 27/03/2025: This is an updated SRN which indicates the Purchase Order for this work order.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (31 analytes)	WATER - EP231X-LL PFAS - Full Suite (31 analytes) Low Level
ES2508368-001	17-Mar-2025 00:00	0990_POT113_250317	✓	
ES2508368-002	17-Mar-2025 00:00	0990_POT128_250317		✓
ES2508368-003	17-Mar-2025 00:00	0990_POT125_250317		✓
ES2508368-004	17-Mar-2025 00:00	0990_OTH117_250317		✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	AP_CustomerService.ANZ@aecom.com
[redacted]		[redacted]
- *AU Certificate of Analysis - NATA (COA)	Email	
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ESDAT (ESDAT)	Email	
[redacted]		
- *AU Certificate of Analysis - NATA (COA)	Email	
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ESDAT (ESDAT)	Email	
esdat aecom-au		
- *AU Certificate of Analysis - NATA (COA)	Email	
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ESDAT (ESDAT)	Email	
[redacted]		
- *AU Certificate of Analysis - NATA (COA)	Email	
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ESDAT (ESDAT)	Email	
[redacted]		
- *AU Certificate of Analysis - NATA (COA)	Email	
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ESDAT (ESDAT)	Email	
[redacted]		
- *AU Certificate of Analysis - NATA (COA)	Email	
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ESDAT (ESDAT)	Email	
[redacted]		
- *AU Certificate of Analysis - NATA (COA)	Email	
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	
- Chain of Custody (CoC) (COC)	Email	
- EDI Format - ESDAT (ESDAT)	Email	

CERTIFICATE OF ANALYSIS

Work Order	: **ES2508368**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	:
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 26-Mar-2025 11:00
Order number	: 60676801/1.05.11	Date Analysis Commenced	: 26-Mar-2025
C-O-C number	: ----	Issue Date	: 31-Mar-2025 10:38
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT113_250317	0990_POT128_250317	0990_POT125_250317	0990_OTH117_250317	----
			Sampling date / time	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00	----
Compound	CAS Number	LOR	Unit	ES2508368-001	ES2508368-002	ES2508368-003	ES2508368-004	--------
				Result	Result	Result	Result	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	----	----	----	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**0.02**	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	----	<0.002	<0.002	**0.006**	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**0.02**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.15**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	----	<0.002	<0.002	**0.007**	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.23**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	----	<0.01	<0.01	<0.01	----
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	----	<0.002	<0.002	<0.002	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT113_250317	0990_POT128_250317	0990_POT125_250317	0990_OTH117_250317	----
			Sampling date / time	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00	----
Compound	CAS Number	LOR	Unit	ES2508368-001	ES2508368-002	ES2508368-003	ES2508368-004	--------
				Result	Result	Result	Result	----
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**0.04**	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	----	<0.005	<0.005	<0.005	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	----	<0.005	<0.005	<0.005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT113_250317	0990_POT128_250317	0990_POT125_250317	0990_OTH117_250317	----
			Sampling date / time	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00	----
Compound	CAS Number	LOR	Unit	ES2508368-001	ES2508368-002	ES2508368-003	ES2508368-004	--------
				Result	Result	Result	Result	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	----	<0.005	<0.005	<0.005	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	----	<0.005	<0.005	<0.005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	----	<0.005	<0.005	<0.005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	----	<0.005	<0.005	<0.005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	----	<0.002	<0.002	<0.002	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	----	<0.002	<0.002	<0.002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	----	<0.005	<0.005	<0.005	----
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	----	<0.005	<0.005	<0.005	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT113_250317	0990_POT128_250317	0990_POT125_250317	0990_OTH117_250317	----
			Sampling date / time	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00	----
Compound	CAS Number	LOR	Unit	ES2508368-001	ES2508368-002	ES2508368-003	ES2508368-004	--------
				Result	Result	Result	Result	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	----	<0.005	<0.005	<0.005	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	----	<0.005	<0.005	<0.005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	----	<0.002	<0.002	**0.013**	----
Sum of PFAS	----	0.01	µg/L	**0.46**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	----	<0.002	<0.002	**0.013**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.38**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.002	µg/L	----	<0.002	<0.002	**0.013**	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.44**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	----	**100**	**101**	**101**	----
13C4-PFOS	----	0.02	%	**90.4**	----	----	----	----
13C8-PFOA	----	0.002	%	----	**108**	**104**	**103**	----
13C8-PFOA	----	0.02	%	**97.9**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2508368**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 26-Mar-2025
Order number	: 60676801/1.05.11	Date Analysis Commenced	: 26-Mar-2025
C-O-C number	: ----	Issue Date	: 31-Mar-2025
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6466634)									
ES2508368-002	0990_POT128_250317	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6470577)									
ES2508368-001	0990_POT113_250317	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.15	0.13	13.7	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.23	0.23	0.0	0% - 20%
		EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6466634)									
ES2508368-002	0990_POT128_250317	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	<0.002	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6466634) - continued									
ES2508368-002	0990_POT128_250317	EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6470577)									
ES2508368-001	0990_POT113_250317	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6466634)									
ES2508368-002	0990_POT128_250317	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6470577)									

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6470577) - continued									
ES2508368-001	0990_POT113_250317	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6466634)									
ES2508368-002	0990_POT128_250317	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6470577)									
ES2508368-001	0990_POT113_250317	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6470577)									
ES2508368-001	0990_POT113_250317	EP231X: Sum of PFAS	----	0.01	µg/L	0.46	0.44	4.4	0% - 20%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6466634)								
EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	0.025 µg/L	84.3	72.0	130
EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	0.025 µg/L	84.6	71.0	127
EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	0.025 µg/L	85.8	68.0	131
EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	0.025 µg/L	103	69.0	134
EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	0.025 µg/L	96.5	65.0	140
EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	0.025 µg/L	80.3	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6470577)								
EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	0.25 µg/L	91.3	70.0	130
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	77.3	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	77.6	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	80.8	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	93.6	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	83.1	65.0	140
EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	0.25 µg/L	96.6	70.0	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	79.6	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6466634)								
EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	0.125 µg/L	93.7	73.0	129
EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.025 µg/L	104	72.0	129
EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	0.025 µg/L	92.9	72.0	129
EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	0.025 µg/L	106	72.0	130
EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	0.025 µg/L	94.7	71.0	133
EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	0.025 µg/L	95.8	69.0	130
EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	0.025 µg/L	96.2	71.0	129
EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	0.025 µg/L	94.4	69.0	133
EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	0.025 µg/L	111	72.0	134
EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	0.025 µg/L	76.8	65.0	144
EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	0.0625 µg/L	100	71.0	132
EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	0.025 µg/L	110	65.6	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6470577)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	88.1	73.0	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6470577) - continued								
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	99.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	91.7	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	91.6	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	86.8	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	90.1	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	95.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	85.7	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	96.2	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6466634)								
EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	0.025 µg/L	89.0	67.0	137
EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	0.0625 µg/L	113	68.0	141
EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	0.0625 µg/L	101	61.1	139
EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	0.0625 µg/L	96.5	72.3	128
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	0.0625 µg/L	94.4	63.2	134
EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	0.025 µg/L	91.5	65.0	136
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	0.025 µg/L	97.5	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6470577)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	86.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	119	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	89.6	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	82.3	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	92.0	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	79.8	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	74.3	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6466634)								
EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	0.025 µg/L	91.4	63.0	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6466634) - continued								
EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	0.025 µg/L	87.0	64.0	140
EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	0.025 µg/L	84.1	67.0	138
EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	0.025 µg/L	78.2	75.2	137
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6470577)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	99.7	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	90.4	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	97.6	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	118	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2508368**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 26-Mar-2025
Site	: ----	Issue Date	: 31-Mar-2025
Sampler	: [redacted]	No. of samples received	: 4
Order number	: 60676801/1.05.11	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	15	6.67	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	0	15	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X-LL) 0990_POT128_250317	**17-Mar-2025**	**26-Mar-2025**	13-Sep-2025	✓	**28-Mar-2025**	13-Sep-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT125_250317, 0990_OTH117_250317	**17-Mar-2025**	**26-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT113_250317	**17-Mar-2025**	**27-Mar-2025**	13-Sep-2025	✓	**28-Mar-2025**	13-Sep-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X-LL) 0990_POT128_250317	**17-Mar-2025**	**26-Mar-2025**	13-Sep-2025	✓	**28-Mar-2025**	13-Sep-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT125_250317, 0990_OTH117_250317	**17-Mar-2025**	**26-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT113_250317	**17-Mar-2025**	**27-Mar-2025**	13-Sep-2025	✓	**28-Mar-2025**	13-Sep-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X-LL) 0990_POT128_250317	**17-Mar-2025**	**26-Mar-2025**	13-Sep-2025	✓	**28-Mar-2025**	13-Sep-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT125_250317, 0990_OTH117_250317	**17-Mar-2025**	**26-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT113_250317	**17-Mar-2025**	**27-Mar-2025**	13-Sep-2025	✓	**28-Mar-2025**	13-Sep-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X-LL) 0990_POT128_250317	**17-Mar-2025**	**26-Mar-2025**	13-Sep-2025	✓	**28-Mar-2025**	13-Sep-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT125_250317, 0990_OTH117_250317	**17-Mar-2025**	**26-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT113_250317	**17-Mar-2025**	**27-Mar-2025**	13-Sep-2025	✓	**28-Mar-2025**	13-Sep-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X-LL) 0990_POT128_250317	**17-Mar-2025**	**26-Mar-2025**	13-Sep-2025	✓	**28-Mar-2025**	13-Sep-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT125_250317, 0990_OTH117_250317	**17-Mar-2025**	**26-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT113_250317	**17-Mar-2025**	**27-Mar-2025**	13-Sep-2025	✓	**28-Mar-2025**	13-Sep-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	15	**6.67**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	1	**100.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	0	15	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	1	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is concentrated, combined with an equal volume of reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2508369**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted] ld
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_25	Page	: 1 of 3
Order number	: 60676801/1.05.11	Quote number	: ES2019AECOMAU0030 (SY/139/19 V3)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [redacted]		

Dates

Date Samples Received	: 26-Mar-2025 11:00	Issue Date	: 27-Mar-2025
Client Requested Due Date	: 01-Apr-2025	Scheduled Reporting Date	: **01-Apr-2025**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 28.0'C 25.1'C 28.0'C DRW 16.5'C 16.4'C 15.3'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 19 / 19

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- 27/03/2025: This is an updated SRN which indicates the Purchase Order for this work order.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **QC Forward analysis will be conducted by NMI.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (31 analytes)	WATER - EP231X-LL PFAS - Full Suite (31 analytes) Low Level
ES2508369-001	17-Mar-2025 00:00	0990_POT112_250317	✓	
ES2508369-002	17-Mar-2025 00:00	0990_POT129_250317		✓
ES2508369-003	17-Mar-2025 00:00	0990_OTH119_250317		✓
ES2508369-004	17-Mar-2025 00:00	0990_POT126_250317		✓
ES2508369-005	17-Mar-2025 00:00	0990_POT131_250317		✓
ES2508369-006	17-Mar-2025 00:00	0990_POT114_250317		✓
ES2508369-007	17-Mar-2025 00:00	0990_POT124_250317		✓
ES2508369-008	17-Mar-2025 00:00	0990_POT120_250317		✓
ES2508369-009	18-Mar-2025 00:00	0990_POT130_250318		✓
ES2508369-010	18-Mar-2025 00:00	0990_POT121_250318	✓	
ES2508369-011	18-Mar-2025 00:00	0990_POT201_250318		✓
ES2508369-012	18-Mar-2025 00:00	0990_POT198_250318		✓
ES2508369-013	18-Mar-2025 00:00	0990_OTH118_250318		✓
ES2508369-014	18-Mar-2025 00:00	0990_POT127_250318	✓	
ES2508369-015	17-Mar-2025 00:00	0990_QC100_250317		✓
ES2508369-016	17-Mar-2025 00:00	0990_QC101_250317	✓	
ES2508369-017	17-Mar-2025 00:00	0990_QC400_250317	✓	
ES2508369-018	18-Mar-2025 00:00	0990_QC400_250318	✓	
ES2508369-019	18-Mar-2025 00:00	0990_QC500_250318	✓	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

esdat aecom-au

- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2508369**	Page	: 1 of 17
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	:
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 26-Mar-2025 11:00
Order number	: 60676801/1.05.11	Date Analysis Commenced	: 26-Mar-2025
C-O-C number	: ----	Issue Date	: 31-Mar-2025 14:40
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3		
No. of samples received	: 19		
No. of samples analysed	: 19		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_250317	0990_POT129_250317	0990_OTH119_250317	0990_POT126_250317	0990_POT131_250317
			Sampling date / time	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508369-001	ES2508369-002	ES2508369-003	ES2508369-004	ES2508369-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	----	**0.008**	**0.004**	<0.002	<0.002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.02**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	----	**0.010**	**0.021**	<0.002	<0.002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.03**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	----	<0.01	<0.01	<0.01	<0.01
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	----	<0.002	**0.002**	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	----	<0.002	**0.003**	<0.002	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_250317	0990_POT129_250317	0990_OTH119_250317	0990_POT126_250317	0990_POT131_250317
			Sampling date / time	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508369-001	ES2508369-002	ES2508369-003	ES2508369-004	ES2508369-005
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	----	<0.002	**0.010**	<0.002	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	----	<0.005	<0.005	<0.005	<0.005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	----	<0.005	<0.005	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	----	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_250317	0990_POT129_250317	0990_OTH119_250317	0990_POT126_250317	0990_POT131_250317
			Sampling date / time	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508369-001	ES2508369-002	ES2508369-003	ES2508369-004	ES2508369-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	----	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	----	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	----	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	----	<0.005	<0.005	<0.005	<0.005
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	----	<0.005	<0.005	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	----	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_250317	0990_POT129_250317	0990_OTH119_250317	0990_POT126_250317	0990_POT131_250317
			Sampling date / time	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508369-001	ES2508369-002	ES2508369-003	ES2508369-004	ES2508369-005
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	----	<0.005	<0.005	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	----	0.018	0.040	<0.002	<0.002
Sum of PFAS	----	0.01	µg/L	0.05	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	----	0.018	0.025	<0.002	<0.002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	0.05	----	----	----	----
Sum of PFAS (WA DER List)	----	0.002	µg/L	----	0.018	0.040	<0.002	<0.002
Sum of PFAS (WA DER List)	----	0.01	µg/L	0.05	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	----	95.8	104	98.5	102
13C4-PFOS	----	0.02	%	95.7	----	----	----	----
13C8-PFOA	----	0.002	%	----	105	103	99.7	104
13C8-PFOA	----	0.02	%	108	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT114_250317	0990_POT124_250317	0990_POT120_250317	0990_POT130_250318	0990_POT121_250318
			Sampling date / time	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00	18-Mar-2025 00:00	18-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508369-006	ES2508369-007	ES2508369-008	ES2508369-009	ES2508369-010
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	**0.003**	<0.002	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	----	----	----	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	**0.002**	<0.002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	**0.005**	**0.008**	**0.018**	<0.002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	----	----	----	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	----	----	----	----	**0.02**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	----	----	----	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	**0.008**	**0.017**	**0.022**	<0.002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	----	----	----	**0.02**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	----	----	----	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	----	----	----	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	----	----	----	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	----	----	----	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	----	----	----	<0.02

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT114_250317	0990_POT124_250317	0990_POT120_250317	0990_POT130_250318	0990_POT121_250318
			Sampling date / time	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00	18-Mar-2025 00:00	18-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508369-006	ES2508369-007	ES2508369-008	ES2508369-009	ES2508369-010
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	----	----	----	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	----	----	----	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	----	----	----	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	----	----	----	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	----	----	----	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	----	----	----	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	----	----	----	<0.05
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	----	----	----	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	----	----	----	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT114_250317	0990_POT124_250317	0990_POT120_250317	0990_POT130_250318	0990_POT121_250318
			Sampling date / time	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00	18-Mar-2025 00:00	18-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508369-006	ES2508369-007	ES2508369-008	ES2508369-009	ES2508369-010
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	----	----	----	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	----	----	----	----	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	----	----	----	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	----	----	----	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	----	----	----	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	----	----	----	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	----	----	----	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT114_250317	0990_POT124_250317	0990_POT120_250317	0990_POT130_250318	0990_POT121_250318
			Sampling date / time	17-Mar-2025 00:00	17-Mar-2025 00:00	17-Mar-2025 00:00	18-Mar-2025 00:00	18-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508369-006	ES2508369-007	ES2508369-008	ES2508369-009	ES2508369-010
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	----	----	----	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	----	----	----	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	**0.013**	**0.025**	**0.045**	<0.002	----
Sum of PFAS	----	0.01	µg/L	----	----	----	----	**0.04**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	**0.013**	**0.025**	**0.040**	<0.002	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	----	----	----	**0.04**
Sum of PFAS (WA DER List)	----	0.002	µg/L	**0.013**	**0.025**	**0.043**	<0.002	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	----	----	----	**0.04**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**102**	**96.8**	**98.3**	**96.7**	----
13C4-PFOS	----	0.02	%	----	----	----	----	**99.4**
13C8-PFOA	----	0.002	%	**102**	**104**	**103**	**103**	----
13C8-PFOA	----	0.02	%	----	----	----	----	**106**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT201_250318	0990_POT198_250318	0990_OTH118_250318	0990_POT127_250318	0990_QC100_250317
			Sampling date / time	18-Mar-2025 00:00	18-Mar-2025 00:00	18-Mar-2025 00:00	18-Mar-2025 00:00	17-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508369-011	ES2508369-012	ES2508369-013	ES2508369-014	ES2508369-015
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	<0.002	----	<0.002
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	----	----	<0.02	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	<0.002	----	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	<0.002	<0.002	----	<0.002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	----	----	<0.02	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	<0.002	----	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	----	----	----	<0.01	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	----	----	<0.02	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	<0.002	<0.002	----	<0.002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	----	----	<0.01	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	<0.002	----	<0.002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	----	----	<0.02	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	<0.01	----	<0.01
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	----	----	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	<0.002	----	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	----	----	<0.02	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	<0.002	<0.002	----	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	----	----	<0.02	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	<0.002	----	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	----	----	<0.02	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT201_250318	0990_POT198_250318	0990_OTH118_250318	0990_POT127_250318	0990_QC100_250317
			Sampling date / time	18-Mar-2025 00:00	18-Mar-2025 00:00	18-Mar-2025 00:00	18-Mar-2025 00:00	17-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508369-011	ES2508369-012	ES2508369-013	ES2508369-014	ES2508369-015
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	<0.002	----	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	----	----	<0.01	----
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	----	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	----	----	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	----	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	----	----	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	<0.002	----	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	----	----	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	<0.002	----	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	----	----	<0.02	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	<0.002	----	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	----	----	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	<0.005	----	<0.005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	----	----	<0.05	----
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	<0.005	----	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	----	<0.002
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	----	----	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	<0.005	----	<0.005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	----	----	<0.05	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT201_250318	0990_POT198_250318	0990_OTH118_250318	0990_POT127_250318	0990_QC100_250317
			Sampling date / time	18-Mar-2025 00:00	18-Mar-2025 00:00	18-Mar-2025 00:00	18-Mar-2025 00:00	17-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508369-011	ES2508369-012	ES2508369-013	ES2508369-014	ES2508369-015
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	----	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	----	----	<0.05	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	<0.005	----	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	----	----	----	<0.05	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	<0.005	----	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	----	----	<0.05	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	<0.002	----	<0.002
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	----	----	<0.02	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	<0.002	----	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	----	----	<0.02	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	<0.005	----	<0.005
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	----	----	<0.05	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	<0.005	----	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	----	----	<0.05	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	<0.005	----	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT201_250318	0990_POT198_250318	0990_OTH118_250318	0990_POT127_250318	0990_QC100_250317
			Sampling date / time	18-Mar-2025 00:00	18-Mar-2025 00:00	18-Mar-2025 00:00	18-Mar-2025 00:00	17-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508369-011	ES2508369-012	ES2508369-013	ES2508369-014	ES2508369-015
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	----	----	<0.05	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	<0.005	----	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	----	----	<0.05	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	<0.002	<0.002	<0.002	----	<0.002
Sum of PFAS	----	0.01	µg/L	----	----	----	<0.01	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	<0.002	<0.002	<0.002	----	<0.002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	----	----	<0.01	----
Sum of PFAS (WA DER List)	----	0.002	µg/L	<0.002	<0.002	<0.002	----	<0.002
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	----	----	<0.01	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**102**	**97.2**	**98.2**	----	**95.4**
13C4-PFOS	----	0.02	%	----	----	----	**106**	----
13C8-PFOA	----	0.002	%	**106**	**102**	**105**	----	**104**
13C8-PFOA	----	0.02	%	----	----	----	**95.0**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC101_250317	0990_QC400_250317	0990_QC400_250318	0990_QC500_250318	----
			Sampling date / time	17-Mar-2025 00:00	17-Mar-2025 00:00	18-Mar-2025 00:00	18-Mar-2025 00:00	----
Compound	CAS Number	LOR	Unit	ES2508369-016	ES2508369-017	ES2508369-018	ES2508369-019	--------
				Result	Result	Result	Result	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**0.03**	<0.02	<0.02	<0.02	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**0.03**	<0.02	<0.02	<0.02	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.17**	<0.01	<0.01	<0.01	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.26**	<0.01	<0.01	<0.01	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**0.06**	<0.02	<0.02	<0.02	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**0.01**	<0.01	<0.01	<0.01	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC101_250317	0990_QC400_250317	0990_QC400_250318	0990_QC500_250318	----
			Sampling date / time	17-Mar-2025 00:00	17-Mar-2025 00:00	18-Mar-2025 00:00	18-Mar-2025 00:00	----
Compound	CAS Number	LOR	Unit	ES2508369-016	ES2508369-017	ES2508369-018	ES2508369-019	--------
				Result	Result	Result	Result	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.56**	<0.01	<0.01	<0.01	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.43**	<0.01	<0.01	<0.01	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.53**	<0.01	<0.01	<0.01	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**99.8**	**101**	**93.4**	**90.5**	----
13C8-PFOA	----	0.02	%	**110**	**108**	**113**	**111**	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2508369**	Page	: 1 of 12
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 26-Mar-2025
Order number	: 60676801/1.05.11	Date Analysis Commenced	: 26-Mar-2025
C-O-C number	: ----	Issue Date	: 31-Mar-2025
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3		
No. of samples received	: 19		
No. of samples analysed	: 19		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6466634)									
ES2508368-002	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6467582)									
ES2508306-002	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.02	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6467591)									
ES2508374-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6467591) - continued									
ES2508374-001	Anonymous	EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2508592-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6466634)									
ES2508368-002	Anonymous	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6467582)									
ES2508306-002	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6467591)									
ES2508374-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6467591) - continued									
ES2508374-001	Anonymous	EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2508592-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.06	0.07	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.07	0.08	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6466634)									
ES2508368-002	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6467582)									
ES2508306-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6467582) - continued									
ES2508306-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6467591)									
ES2508374-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2508592-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6466634)									
ES2508368-002	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6466634) - continued									
ES2508368-002	Anonymous	EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6467582)									
ES2508306-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6467591)									
ES2508374-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2508592-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6467582)									
ES2508306-002	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	0.02	66.7	No Limit
EP231P: PFAS Sums (QC Lot: 6467591)									
ES2508374-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	0.04	0.0	No Limit
ES2508592-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.19	0.21	10.0	0% - 20%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6466634)								
EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	0.025 µg/L	84.3	72.0	130
EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	0.025 µg/L	84.6	71.0	127
EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	0.025 µg/L	85.8	68.0	131
EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	0.025 µg/L	103	69.0	134
EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	0.025 µg/L	96.5	65.0	140
EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	0.025 µg/L	80.3	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6467582)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	74.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	82.5	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	81.5	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	89.6	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	84.5	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	84.8	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6467591)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	81.3	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	81.5	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	82.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	88.5	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	82.7	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	79.5	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6466634)								
EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	0.125 µg/L	93.7	73.0	129
EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.025 µg/L	104	72.0	129
EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	0.025 µg/L	92.9	72.0	129
EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	0.025 µg/L	106	72.0	130
EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	0.025 µg/L	94.7	71.0	133
EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	0.025 µg/L	95.8	69.0	130
EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	0.025 µg/L	96.2	71.0	129
EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	0.025 µg/L	94.4	69.0	133
EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	0.025 µg/L	111	72.0	134

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6466634) - continued								
EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	0.025 µg/L	76.8	65.0	144
EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	0.0625 µg/L	100	71.0	132
EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	0.025 µg/L	110	65.6	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6467582)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	88.5	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	87.1	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	96.6	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	85.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	84.4	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	75.9	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	86.3	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	84.7	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	80.3	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	94.7	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6467591)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	88.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	98.4	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	87.1	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	97.9	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	91.6	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	86.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	89.5	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	95.8	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	80.1	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	91.5	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6466634)								
EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	0.025 µg/L	89.0	67.0	137
EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	0.0625 µg/L	113	68.0	141
EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	0.0625 µg/L	101	61.1	139
EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	0.0625 µg/L	96.5	72.3	128

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6466634) - continued								
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	0.0625 µg/L	94.4	63.2	134
EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	0.025 µg/L	91.5	65.0	136
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	0.025 µg/L	97.5	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6467582)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	91.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	103	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	84.2	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	87.5	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	87.6	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	83.7	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	77.3	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6467591)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	84.9	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	114	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	102	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	83.7	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	86.6	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	83.1	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	90.5	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6466634)								
EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	0.025 µg/L	91.4	63.0	143
EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	0.025 µg/L	87.0	64.0	140
EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	0.025 µg/L	84.1	67.0	138
EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	0.025 µg/L	78.2	75.2	137
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6467582)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	103	63.0	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6467582) - continued								
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	93.1	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	85.1	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	113	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6467591)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	90.6	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	80.3	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	89.3	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	84.7	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6467582)							
ES2508306-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	76.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	83.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	71.4	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	84.4	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	79.6	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	78.4	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6467591)							
ES2508374-001	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	83.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	77.4	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	77.2	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	91.3	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	82.8	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	78.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6467582)							
ES2508306-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	82.3	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	93.7	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	84.3	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	88.0	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	82.0	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	78.4	69.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6467582) - continued							
ES2508306-002	Anonymous	EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	75.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	85.0	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	104	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	78.1	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	101	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6467591)							
ES2508374-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	85.7	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	103	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	93.0	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	102	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	94.5	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	92.5	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	88.7	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	85.8	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	101	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	87.7	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	93.9	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6467582)							
ES2508306-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	78.1	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	103	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	78.2	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	71.8	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	83.1	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	72.3	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	71.8	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6467591)							
ES2508374-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	86.1	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	111	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	87.4	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	87.6	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	92.6	57.6	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6467591) - continued							
ES2508374-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	85.2	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	97.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6467582)							
ES2508306-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	101	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	81.2	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	80.3	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	96.5	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6467591)							
ES2508374-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	89.3	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	83.4	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	92.6	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	79.5	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2508369**	Page	: 1 of 6
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 26-Mar-2025
Site	: ----	Issue Date	: 31-Mar-2025
Sampler	: [redacted]	No. of samples received	: 19
Order number	: 60676801/1.05.11	No. of samples analysed	: 19

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	15	6.67	10.00	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	39	7.69	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	0	15	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
0990_POT129_250317,	0990_OTH119_250317,	**17-Mar-2025**	**26-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
0990_POT126_250317,	0990_POT131_250317,							
0990_POT114_250317,	0990_POT124_250317,							
0990_POT120_250317,	0990_QC100_250317							
HDPE (no PTFE) (EP231X)								
0990_POT112_250317,	0990_QC101_250317,	**17-Mar-2025**	**27-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
0990_QC400_250317								
HDPE (no PTFE) (EP231X-LL)								
0990_POT130_250318,	0990_POT201_250318,	**18-Mar-2025**	**26-Mar-2025**	14-Sep-2025	✓	**31-Mar-2025**	14-Sep-2025	✓
0990_POT198_250318,	0990_OTH118_250318							
HDPE (no PTFE) (EP231X)								
0990_POT121_250318,	0990_POT127_250318,	**18-Mar-2025**	**27-Mar-2025**	14-Sep-2025	✓	**31-Mar-2025**	14-Sep-2025	✓
0990_QC400_250318,	0990_QC500_250318							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X-LL)								
0990_POT129_250317,	0990_OTH119_250317,	**17-Mar-2025**	**26-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
0990_POT126_250317,	0990_POT131_250317,							
0990_POT114_250317,	0990_POT124_250317,							
0990_POT120_250317,	0990_QC100_250317							
HDPE (no PTFE) (EP231X)								
0990_POT112_250317,	0990_QC101_250317,	**17-Mar-2025**	**27-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
0990_QC400_250317								
HDPE (no PTFE) (EP231X-LL)								
0990_POT130_250318,	0990_POT201_250318,	**18-Mar-2025**	**26-Mar-2025**	14-Sep-2025	✓	**31-Mar-2025**	14-Sep-2025	✓
0990_POT198_250318,	0990_OTH118_250318							
HDPE (no PTFE) (EP231X)								
0990_POT121_250318,	0990_POT127_250318,	**18-Mar-2025**	**27-Mar-2025**	14-Sep-2025	✓	**31-Mar-2025**	14-Sep-2025	✓
0990_QC400_250318,	0990_QC500_250318							
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X-LL)								
0990_POT129_250317,	0990_OTH119_250317,	**17-Mar-2025**	**26-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
0990_POT126_250317,	0990_POT131_250317,							
0990_POT114_250317,	0990_POT124_250317,							
0990_POT120_250317,	0990_QC100_250317							
HDPE (no PTFE) (EP231X)								
0990_POT112_250317,	0990_QC101_250317,	**17-Mar-2025**	**27-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
0990_QC400_250317								
HDPE (no PTFE) (EP231X-LL)								
0990_POT130_250318,	0990_POT201_250318,	**18-Mar-2025**	**26-Mar-2025**	14-Sep-2025	✓	**31-Mar-2025**	14-Sep-2025	✓
0990_POT198_250318,	0990_OTH118_250318							
HDPE (no PTFE) (EP231X)								
0990_POT121_250318,	0990_POT127_250318,	**18-Mar-2025**	**27-Mar-2025**	14-Sep-2025	✓	**31-Mar-2025**	14-Sep-2025	✓
0990_QC400_250318,	0990_QC500_250318							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
0990_POT129_250317,	0990_OTH119_250317,	**17-Mar-2025**	**26-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
0990_POT126_250317,	0990_POT131_250317,							
0990_POT114_250317,	0990_POT124_250317,							
0990_POT120_250317,	0990_QC100_250317							
HDPE (no PTFE) (EP231X)								
0990_POT112_250317,	0990_QC101_250317,	**17-Mar-2025**	**27-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
0990_QC400_250317								
HDPE (no PTFE) (EP231X-LL)								
0990_POT130_250318,	0990_POT201_250318,	**18-Mar-2025**	**26-Mar-2025**	14-Sep-2025	✓	**31-Mar-2025**	14-Sep-2025	✓
0990_POT198_250318,	0990_OTH118_250318							
HDPE (no PTFE) (EP231X)								
0990_POT121_250318,	0990_POT127_250318,	**18-Mar-2025**	**27-Mar-2025**	14-Sep-2025	✓	**31-Mar-2025**	14-Sep-2025	✓
0990_QC400_250318,	0990_QC500_250318							
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X-LL)								
0990_POT129_250317,	0990_OTH119_250317,	**17-Mar-2025**	**26-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
0990_POT126_250317,	0990_POT131_250317,							
0990_POT114_250317,	0990_POT124_250317,							
0990_POT120_250317,	0990_QC100_250317							
HDPE (no PTFE) (EP231X)								
0990_POT112_250317,	0990_QC101_250317,	**17-Mar-2025**	**27-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
0990_QC400_250317								
HDPE (no PTFE) (EP231X-LL)								
0990_POT130_250318,	0990_POT201_250318,	**18-Mar-2025**	**26-Mar-2025**	14-Sep-2025	✓	**31-Mar-2025**	14-Sep-2025	✓
0990_POT198_250318,	0990_OTH118_250318							
HDPE (no PTFE) (EP231X)								
0990_POT121_250318,	0990_POT127_250318,	**18-Mar-2025**	**27-Mar-2025**	14-Sep-2025	✓	**31-Mar-2025**	14-Sep-2025	✓
0990_QC400_250318,	0990_QC500_250318							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	15	**6.67**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	39	**7.69**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	0	15	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is concentrated, combined with an equal volume of reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2508369**	Page	: 1 of 6
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 26-Mar-2025
Site	: ----	Issue Date	: 31-Mar-2025
Sampler	: [redacted]	No. of samples received	: 19
Order number	: 60676801/1.05.11	No. of samples analysed	: 19

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	15	6.67	10.00	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	39	7.69	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	0	15	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
0990_POT129_250317,	0990_OTH119_250317,	**17-Mar-2025**	**26-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
0990_POT126_250317,	0990_POT131_250317,							
0990_POT114_250317,	0990_POT124_250317,							
0990_POT120_250317,	0990_QC100_250317							
HDPE (no PTFE) (EP231X)								
0990_POT112_250317,	0990_QC101_250317,	**17-Mar-2025**	**27-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
0990_QC400_250317								
HDPE (no PTFE) (EP231X-LL)								
0990_POT130_250318,	0990_POT201_250318,	**18-Mar-2025**	**26-Mar-2025**	14-Sep-2025	✓	**31-Mar-2025**	14-Sep-2025	✓
0990_POT198_250318,	0990_OTH118_250318							
HDPE (no PTFE) (EP231X)								
0990_POT121_250318,	0990_POT127_250318,	**18-Mar-2025**	**27-Mar-2025**	14-Sep-2025	✓	**31-Mar-2025**	14-Sep-2025	✓
0990_QC400_250318,	0990_QC500_250318							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X-LL)								
0990_POT129_250317,	0990_OTH119_250317,	**17-Mar-2025**	**26-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
0990_POT126_250317,	0990_POT131_250317,							
0990_POT114_250317,	0990_POT124_250317,							
0990_POT120_250317,	0990_QC100_250317							
HDPE (no PTFE) (EP231X)								
0990_POT112_250317,	0990_QC101_250317,	**17-Mar-2025**	**27-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
0990_QC400_250317								
HDPE (no PTFE) (EP231X-LL)								
0990_POT130_250318,	0990_POT201_250318,	**18-Mar-2025**	**26-Mar-2025**	14-Sep-2025	✓	**31-Mar-2025**	14-Sep-2025	✓
0990_POT198_250318,	0990_OTH118_250318							
HDPE (no PTFE) (EP231X)								
0990_POT121_250318,	0990_POT127_250318,	**18-Mar-2025**	**27-Mar-2025**	14-Sep-2025	✓	**31-Mar-2025**	14-Sep-2025	✓
0990_QC400_250318,	0990_QC500_250318							
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X-LL)								
0990_POT129_250317,	0990_OTH119_250317,	**17-Mar-2025**	**26-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
0990_POT126_250317,	0990_POT131_250317,							
0990_POT114_250317,	0990_POT124_250317,							
0990_POT120_250317,	0990_QC100_250317							
HDPE (no PTFE) (EP231X)								
0990_POT112_250317,	0990_QC101_250317,	**17-Mar-2025**	**27-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
0990_QC400_250317								
HDPE (no PTFE) (EP231X-LL)								
0990_POT130_250318,	0990_POT201_250318,	**18-Mar-2025**	**26-Mar-2025**	14-Sep-2025	✓	**31-Mar-2025**	14-Sep-2025	✓
0990_POT198_250318,	0990_OTH118_250318							
HDPE (no PTFE) (EP231X)								
0990_POT121_250318,	0990_POT127_250318,	**18-Mar-2025**	**27-Mar-2025**	14-Sep-2025	✓	**31-Mar-2025**	14-Sep-2025	✓
0990_QC400_250318,	0990_QC500_250318							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
0990_POT129_250317,	0990_OTH119_250317,	**17-Mar-2025**	**26-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
0990_POT126_250317,	0990_POT131_250317,							
0990_POT114_250317,	0990_POT124_250317,							
0990_POT120_250317,	0990_QC100_250317							
HDPE (no PTFE) (EP231X)								
0990_POT112_250317,	0990_QC101_250317,	**17-Mar-2025**	**27-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
0990_QC400_250317								
HDPE (no PTFE) (EP231X-LL)								
0990_POT130_250318,	0990_POT201_250318,	**18-Mar-2025**	**26-Mar-2025**	14-Sep-2025	✓	**31-Mar-2025**	14-Sep-2025	✓
0990_POT198_250318,	0990_OTH118_250318							
HDPE (no PTFE) (EP231X)								
0990_POT121_250318,	0990_POT127_250318,	**18-Mar-2025**	**27-Mar-2025**	14-Sep-2025	✓	**31-Mar-2025**	14-Sep-2025	✓
0990_QC400_250318,	0990_QC500_250318							
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X-LL)								
0990_POT129_250317,	0990_OTH119_250317,	**17-Mar-2025**	**26-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
0990_POT126_250317,	0990_POT131_250317,							
0990_POT114_250317,	0990_POT124_250317,							
0990_POT120_250317,	0990_QC100_250317							
HDPE (no PTFE) (EP231X)								
0990_POT112_250317,	0990_QC101_250317,	**17-Mar-2025**	**27-Mar-2025**	13-Sep-2025	✓	**31-Mar-2025**	13-Sep-2025	✓
0990_QC400_250317								
HDPE (no PTFE) (EP231X-LL)								
0990_POT130_250318,	0990_POT201_250318,	**18-Mar-2025**	**26-Mar-2025**	14-Sep-2025	✓	**31-Mar-2025**	14-Sep-2025	✓
0990_POT198_250318,	0990_OTH118_250318							
HDPE (no PTFE) (EP231X)								
0990_POT121_250318,	0990_POT127_250318,	**18-Mar-2025**	**27-Mar-2025**	14-Sep-2025	✓	**31-Mar-2025**	14-Sep-2025	✓
0990_QC400_250318,	0990_QC500_250318							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	15	**6.67**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	39	**7.69**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	0	15	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is concentrated, combined with an equal volume of reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2510860**
Amendment : **1**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_25	Page	: 1 of 3
Order number	: 60676801 / 7.03.01	Quote number	: ES2019AECOMAU0030 (SY/139/19 V3)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Private Property & Cossack GME		
Sampler	: [redacted]		

Dates

Date Samples Received	: 16-Apr-2025 11:00	Issue Date	: 28-Apr-2025
Client Requested Due Date	: 28-Apr-2025	Scheduled Reporting Date	: **28-Apr-2025**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 16.7'C 17.8'C 12.0'C DRW 9.3'C 10.3'C 7.8 SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 31 / 31

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **28/04/2025: This is an updated SRN reflecting an amendment to report specific samples ES2510860-001 to 015 individually, 016 to 017, and 018 to 031 respectively on a separate COAs.**
- **QC Forward analysis will be conducted by NMI.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (31 analytes)	WATER - EP231X-LL PFAS - Full Suite (31 analytes) Low Level
ES2510860-001	14-Apr-2025 00:00	0990_POT112_250414	✓	
ES2510860-002	14-Apr-2025 00:00	0990_POT128_250414		✓
ES2510860-003	14-Apr-2025 00:00	0990_POT113_250414	✓	
ES2510860-004	14-Apr-2025 00:00	0990_POT129_250414		✓
ES2510860-005	14-Apr-2025 00:00	0990_OTH119_250414		✓
ES2510860-006	14-Apr-2025 00:00	0990_POT126_250414		✓
ES2510860-007	14-Apr-2025 00:00	0990_OTH117_250414		✓
ES2510860-008	14-Apr-2025 00:00	0990_POT125_250414		✓
ES2510860-009	15-Apr-2025 00:00	0990_POT130_250415		✓
ES2510860-010	15-Apr-2025 00:00	0990_POT121_250415	✓	
ES2510860-011	14-Apr-2025 00:00	0990_POT120_250414	✓	
ES2510860-012	14-Apr-2025 00:00	0990_POT198_250414		✓
ES2510860-013	15-Apr-2025 00:00	0990_POT201_250415		✓
ES2510860-014	14-Apr-2025 00:00	0990_POT124_250414		✓
ES2510860-015	14-Apr-2025 00:00	0990_POT114_250414		✓
ES2510860-016	15-Apr-2025 00:00	0990_POT127_250415		✓
ES2510860-017	14-Apr-2025 00:00	0990_OTH118_250414		✓
ES2510860-018	14-Apr-2025 00:00	0990_QC100_250414	✓	
ES2510860-019	14-Apr-2025 00:00	0990_QC300_250414	✓	
ES2510860-020	15-Apr-2025 00:00	0990_MW808_250415	✓	
ES2510860-021	15-Apr-2025 00:00	0990_MW809_250415	✓	
ES2510860-022	15-Apr-2025 00:00	0990_MW810_250415	✓	
ES2510860-023	15-Apr-2025 00:00	0990_MW811_250415	✓	
ES2510860-024	15-Apr-2025 00:00	0990_MW812_250415	✓	
ES2510860-025	15-Apr-2025 00:00	0990_MW813_250415	✓	
ES2510860-026	14-Apr-2025 00:00	0990_QC400_250414	✓	
ES2510860-027	15-Apr-2025 00:00	0990_QC301_250415	✓	
ES2510860-028	15-Apr-2025 00:00	0990_QC401_250415	✓	
ES2510860-029	14-Apr-2025 00:00	0990_QC500_250414	✓	
ES2510860-030	14-Apr-2025 00:00	0990_QC101_250414	✓	
ES2510860-031	15-Apr-2025 00:00	0990_QC102_250415	✓	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT) Email

ESDAT+ AECOM-AU

- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2510860**	Page	: 1 of 25
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 16-Apr-2025 11:00
Order number	: 60676801 / 7.03.01	Date Analysis Commenced	: 16-Apr-2025
C-O-C number	: ----	Issue Date	: 24-Apr-2025 17:33
Sampler	: [redacted]		
Site	: Private Property & Cossack GME		
Quote number	: SY/139/19 V3		
No. of samples received	: 31		
No. of samples analysed	: 31		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_250414	0990_POT128_250414	0990_POT113_250414	0990_POT129_250414	0990_OTH119_250414
			Sampling date / time	14-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510860-001	ES2510860-002	ES2510860-003	ES2510860-004	ES2510860-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	**0.08**	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	----	<0.002	----	**0.007**	**0.004**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	**0.10**	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.02**	----	**0.66**	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	**0.03**	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	----	<0.002	----	**0.010**	**0.027**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.02**	----	**0.97**	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	<0.02	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	----	<0.01	----	<0.01	<0.01
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	<0.1	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	**0.04**	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	**0.17**	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	----	<0.002	----	<0.002	**0.002**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	<0.02	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_250414	0990_POT128_250414	0990_POT113_250414	0990_POT129_250414	0990_OTH119_250414
			Sampling date / time	14-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510860-001	ES2510860-002	ES2510860-003	ES2510860-004	ES2510860-005
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	----	<0.002	----	<0.002	**0.012**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	**0.04**	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	----	<0.005	----	<0.005	<0.005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	<0.05	----	----
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	----	<0.005	----	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	<0.02	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	----	<0.005	----	<0.005	<0.005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	<0.05	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_250414	0990_POT128_250414	0990_POT113_250414	0990_POT129_250414	0990_OTH119_250414
			Sampling date / time	14-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510860-001	ES2510860-002	ES2510860-003	ES2510860-004	ES2510860-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	----	<0.005	----	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	----	<0.005	----	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	<0.05	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	----	<0.005	----	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	----	<0.002	----	<0.002	<0.002
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	<0.02	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	----	<0.002	----	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	<0.02	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	----	<0.005	----	<0.005	<0.005
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	<0.05	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	----	<0.005	----	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	<0.05	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	----	<0.005	----	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_250414	0990_POT128_250414	0990_POT113_250414	0990_POT129_250414	0990_OTH119_250414
			Sampling date / time	14-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510860-001	ES2510860-002	ES2510860-003	ES2510860-004	ES2510860-005
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	<0.05	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	----	<0.005	----	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	<0.05	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	----	<0.002	----	**0.017**	**0.045**
Sum of PFAS	----	0.01	µg/L	**0.04**	----	**2.09**	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	----	<0.002	----	**0.017**	**0.031**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.04**	----	**1.63**	----	----
Sum of PFAS (WA DER List)	----	0.002	µg/L	----	<0.002	----	**0.017**	**0.045**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.04**	----	**1.96**	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	----	**98.6**	----	**104**	**89.0**
13C4-PFOS	----	0.02	%	**100**	----	**99.7**	----	----
13C8-PFOA	----	0.002	%	----	**96.5**	----	**102**	**98.1**
13C8-PFOA	----	0.02	%	**98.9**	----	**101**	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT126_250414	0990_OTH117_250414	0990_POT125_250414	0990_POT130_250415	0990_POT121_250415
			Sampling date / time	14-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510860-006	ES2510860-007	ES2510860-008	ES2510860-009	ES2510860-010
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	----	----	----	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	**0.007**	<0.002	<0.002	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	----	----	----	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	----	----	----	----	**0.02**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	----	----	----	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	**0.010**	<0.002	<0.002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	----	----	----	**0.02**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	----	----	----	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	----	----	----	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	----	----	----	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	----	----	----	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	----	----	----	<0.02

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT126_250414	0990_OTH117_250414	0990_POT125_250414	0990_POT130_250415	0990_POT121_250415
			Sampling date / time	14-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510860-006	ES2510860-007	ES2510860-008	ES2510860-009	ES2510860-010
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	----	----	----	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	----	----	----	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	----	----	----	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	----	----	----	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	----	----	----	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	----	----	----	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	----	----	----	<0.05
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	----	----	----	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	----	----	----	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT126_250414	0990_OTH117_250414	0990_POT125_250414	0990_POT130_250415	0990_POT121_250415
			Sampling date / time	14-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510860-006	ES2510860-007	ES2510860-008	ES2510860-009	ES2510860-010
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	----	----	----	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	----	----	----	----	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	----	----	----	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	----	----	----	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	----	----	----	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	----	----	----	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	**0.024**	<0.005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	----	----	----	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT126_250414	0990_OTH117_250414	0990_POT125_250414	0990_POT130_250415	0990_POT121_250415
			Sampling date / time	14-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510860-006	ES2510860-007	ES2510860-008	ES2510860-009	ES2510860-010
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	----	----	----	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	----	----	----	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	<0.002	**0.017**	**0.024**	<0.002	----
Sum of PFAS	----	0.01	µg/L	----	----	----	----	**0.04**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	<0.002	**0.017**	<0.002	<0.002	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	----	----	----	**0.04**
Sum of PFAS (WA DER List)	----	0.002	µg/L	<0.002	**0.017**	**0.024**	<0.002	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	----	----	----	**0.04**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**92.2**	**101**	**92.9**	**102**	----
13C4-PFOS	----	0.02	%	----	----	----	----	**96.3**
13C8-PFOA	----	0.002	%	**105**	**103**	**97.2**	**100**	----
13C8-PFOA	----	0.02	%	----	----	----	----	**100**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT120_250414	0990_POT198_250414	0990_POT201_250415	0990_POT124_250414	0990_POT114_250414
			Sampling date / time	14-Apr-2025 00:00	14-Apr-2025 00:00	15-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510860-011	ES2510860-012	ES2510860-013	ES2510860-014	ES2510860-015
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	----	<0.002	<0.002	**0.008**	**0.004**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.02**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	----	<0.002	<0.002	**0.018**	**0.008**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.02**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	----	<0.01	<0.01	<0.01	<0.01
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT120_250414	0990_POT198_250414	0990_POT201_250415	0990_POT124_250414	0990_POT114_250414
			Sampling date / time	14-Apr-2025 00:00	14-Apr-2025 00:00	15-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510860-011	ES2510860-012	ES2510860-013	ES2510860-014	ES2510860-015
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	----	<0.005	<0.005	<0.005	<0.005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	----	<0.005	<0.005	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	----	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT120_250414	0990_POT198_250414	0990_POT201_250415	0990_POT124_250414	0990_POT114_250414
			Sampling date / time	14-Apr-2025 00:00	14-Apr-2025 00:00	15-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510860-011	ES2510860-012	ES2510860-013	ES2510860-014	ES2510860-015
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	----	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	----	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	----	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	----	<0.002	<0.002	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	----	<0.005	<0.005	<0.005	<0.005
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	----	<0.005	**0.035**	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	----	<0.005	<0.005	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT120_250414	0990_POT198_250414	0990_POT201_250415	0990_POT124_250414	0990_POT114_250414
			Sampling date / time	14-Apr-2025 00:00	14-Apr-2025 00:00	15-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510860-011	ES2510860-012	ES2510860-013	ES2510860-014	ES2510860-015
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	----	<0.005	<0.005	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	----	<0.002	**0.035**	**0.026**	**0.012**
Sum of PFAS	----	0.01	µg/L	**0.04**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	----	<0.002	<0.002	**0.026**	**0.012**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.04**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.002	µg/L	----	<0.002	**0.035**	**0.026**	**0.012**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.04**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	----	**101**	**101**	**103**	**104**
13C4-PFOS	----	0.02	%	**96.3**	----	----	----	----
13C8-PFOA	----	0.002	%	----	**95.0**	**94.4**	**99.1**	**95.6**
13C8-PFOA	----	0.02	%	**99.8**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT127_250415	0990_OTH118_250414	0990_QC100_250414	0990_QC300_250414	0990_MW808_250415
			Sampling date / time	15-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00	15-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510860-016	ES2510860-017	ES2510860-018	ES2510860-019	ES2510860-020
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	----	**0.08**	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	----	**0.08**	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	----	----	**0.60**	**0.10**	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	----	**0.03**	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	----	**1.06**	**0.08**	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	----	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	----	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	----	**0.04**	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	----	**0.18**	**0.02**	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	----	<0.02	<0.02	<0.02

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT127_250415	0990_OTH118_250414	0990_QC100_250414	0990_QC300_250414	0990_MW808_250415
			Sampling date / time	15-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00	15-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510860-016	ES2510860-017	ES2510860-018	ES2510860-019	ES2510860-020
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	----	**0.05**	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	----	<0.05	<0.05	<0.05
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	----	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	----	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT127_250415	0990_OTH118_250414	0990_QC100_250414	0990_QC300_250414	0990_MW808_250415
			Sampling date / time	15-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00	15-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510860-016	ES2510860-017	ES2510860-018	ES2510860-019	ES2510860-020
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	----	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	----	----	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	----	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	----	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	----	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	----	----	----
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	----	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	----	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT127_250415	0990_OTH118_250414	0990_QC100_250414	0990_QC300_250414	0990_MW808_250415
			Sampling date / time	15-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00	15-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510860-016	ES2510860-017	ES2510860-018	ES2510860-019	ES2510860-020
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	----	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	----	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	<0.002	<0.002	----	----	----
Sum of PFAS	----	0.01	µg/L	----	----	**2.14**	**0.20**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	<0.002	<0.002	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	----	**1.66**	**0.18**	<0.01
Sum of PFAS (WA DER List)	----	0.002	µg/L	<0.002	<0.002	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	----	**2.01**	**0.20**	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**98.6**	**93.2**	----	----	----
13C4-PFOS	----	0.02	%	----	----	**96.4**	**101**	**104**
13C8-PFOA	----	0.002	%	**98.3**	**98.3**	----	----	----
13C8-PFOA	----	0.02	%	----	----	**101**	**99.0**	**96.9**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW809_250415	0990_MW810_250415	0990_MW811_250415	0990_MW812_250415	0990_MW813_250415
			Sampling date / time	15-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510860-021	ES2510860-022	ES2510860-023	ES2510860-024	ES2510860-025
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	**0.03**	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	**0.03**	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	**0.08**	**0.04**	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.01**	**0.04**	**0.06**	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	**0.07**	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW809_250415	0990_MW810_250415	0990_MW811_250415	0990_MW812_250415	0990_MW813_250415
			Sampling date / time	15-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510860-021	ES2510860-022	ES2510860-023	ES2510860-024	ES2510860-025
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.01**	**0.25**	**0.10**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.01**	**0.12**	**0.10**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.01**	**0.22**	**0.10**	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**106**	**101**	**100**	**101**	**104**
13C8-PFOA	----	0.02	%	**96.7**	**99.7**	**103**	**101**	**101**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC400_250414	0990_QC301_250415	0990_QC401_250415	0990_QC500_250414	0990_QC101_250414
			Sampling date / time	14-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510860-026	ES2510860-027	ES2510860-028	ES2510860-029	ES2510860-030
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	**0.01**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	**0.02**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC400_250414	0990_QC301_250415	0990_QC401_250415	0990_QC500_250414	0990_QC101_250414
			Sampling date / time	14-Apr-2025 00:00	15-Apr-2025 00:00	15-Apr-2025 00:00	14-Apr-2025 00:00	14-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2510860-026	ES2510860-027	ES2510860-028	ES2510860-029	ES2510860-030
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	**0.03**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	**0.03**
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	**0.03**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**92.8**	**94.4**	**92.5**	**103**	**109**
13C8-PFOA	----	0.02	%	**90.6**	**88.6**	**87.8**	**87.9**	**95.6**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC102_250415	----	----	----	----
			Sampling date / time	15-Apr-2025 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2510860-031	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC102_250415	----	----	----	----
			Sampling date / time	15-Apr-2025 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2510860-031	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**98.5**	----	----	----	----
13C8-PFOA	----	0.02	%	**96.3**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2510860**	Page	: 1 of 11
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	[redacted]
Telephone	: ----	Telephone	[redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 16-Apr-2025
Order number	: 60676801 / 7.03.01	Date Analysis Commenced	: 16-Apr-2025
C-O-C number	: ----	Issue Date	: 24-Apr-2025
Sampler	: [redacted]		
Site	: Private Property & Cossack GME		
Quote number	: SY/139/19 V3		
No. of samples received	: 31		
No. of samples analysed	: 31		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6522495)									
ES2510776-005	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2510776-007	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6522502)									
ES2510860-020	0990_MW808_250415	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6522495)									
ES2510776-005	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6522495) - continued									
ES2510776-005	Anonymous	EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2510776-007	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6522502)									
ES2510860-020	0990_MW808_250415	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6522495)									
ES2510776-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6522495) - continued									
ES2510776-005	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2510776-007	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6522502)									
ES2510860-020	0990_MW808_250415	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6522495)									
ES2510776-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6522495) - continued									
ES2510776-005	Anonymous	EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2510776-007	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6522502)									
ES2510860-020	0990_MW808_250415	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6522495)									
ES2510776-005	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2510776-007	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6522502)									
ES2510860-020	0990_MW808_250415	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6516768)								
EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	0.025 µg/L	105	72.0	130
EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	0.025 µg/L	109	71.0	127
EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	0.025 µg/L	101	68.0	131
EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	0.025 µg/L	107	69.0	134
EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	0.025 µg/L	100	65.0	140
EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	0.025 µg/L	79.2	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6522495)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	84.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	82.0	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	80.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	100	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	95.1	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	91.7	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6522502)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	85.1	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	91.8	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	85.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	86.6	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	83.9	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	78.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6516768)								
EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	0.125 µg/L	104	73.0	129
EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.025 µg/L	101	72.0	129
EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	0.025 µg/L	102	72.0	129
EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	0.025 µg/L	108	72.0	130
EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	0.025 µg/L	101	71.0	133
EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	0.025 µg/L	97.5	69.0	130
EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	0.025 µg/L	98.7	71.0	129
EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	0.025 µg/L	93.4	69.0	133
EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	0.025 µg/L	120	72.0	134

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6516768) - continued								
EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	0.025 µg/L	98.7	65.0	144
EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	0.0625 µg/L	109	71.0	132
EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	0.025 µg/L	116	65.6	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6522495)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	94.0	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	87.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	84.7	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	86.3	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	85.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	86.6	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	89.4	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	84.6	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	96.3	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	83.5	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	101	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6522502)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	85.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	85.9	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	93.0	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	93.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	88.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	92.4	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	98.2	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	85.7	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	90.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	98.6	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6516768)								
EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	0.025 µg/L	105	67.0	137
EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	0.0625 µg/L	123	68.0	141
EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	0.0625 µg/L	125	61.1	139
EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	0.0625 µg/L	102	72.3	128

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6516768) - continued								
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	0.0625 µg/L	119	63.2	134
EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	0.025 µg/L	95.9	65.0	136
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	0.025 µg/L	110	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6522495)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	92.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	112	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	93.4	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	93.0	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	95.8	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	96.3	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	84.1	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6522502)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	89.9	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	89.5	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	91.3	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	95.6	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	101	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	95.5	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	90.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6516768)								
EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	0.025 µg/L	125	63.0	143
EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	0.025 µg/L	86.0	64.0	140
EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	0.025 µg/L	88.5	67.0	138
EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	0.025 µg/L	118	75.2	137
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6522495)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	90.2	63.0	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6522495) - continued								
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	89.3	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	83.4	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	87.4	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6522502)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	110	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	91.9	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	128	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	112	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6522495)							
ES2510776-005	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	82.7	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	83.4	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	82.6	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	96.9	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	90.1	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	84.5	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6522502)							
ES2510860-020	0990_MW808_250415	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	81.2	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	93.4	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	87.6	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	93.7	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	91.8	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	85.3	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6522495)							
ES2510776-005	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	92.2	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	88.6	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	85.2	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	87.7	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	87.3	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	88.4	69.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6522495) - continued							
ES2510776-005	Anonymous	EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	88.0	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	81.0	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	92.2	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	80.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	96.8	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6522502)							
ES2510860-020	0990_MW808_250415	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	88.7	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	91.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	92.4	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	94.7	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	92.3	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	88.3	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	95.2	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	88.1	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	112	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	101	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	91.4	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6522495)							
ES2510776-005	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	91.5	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	100	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	87.0	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	92.6	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	86.0	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	85.8	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	77.0	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6522502)							
ES2510860-020	0990_MW808_250415	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	96.7	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	89.9	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	100	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	88.1	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	100	57.6	145

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6522502) - continued							
ES2510860-020	0990_MW808_250415	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	87.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	111	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6522495)							
ES2510776-005	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	99.6	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	94.1	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	87.3	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	88.5	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6522502)							
ES2510860-020	0990_MW808_250415	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	94.8	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	82.9	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	131	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	89.3	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2510860**	Page	: 1 of 6
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 16-Apr-2025
Site	: Private Property & Cossack GME	Issue Date	: 24-Apr-2025
Sampler	: [redacted]	No. of samples received	: 31
Order number	: 60676801 / 7.03.01	No. of samples analysed	: 31

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	0	13	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	38	7.89	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	0	13	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
0990_POT128_250414,	0990_POT129_250414,	**14-Apr-2025**	**16-Apr-2025**	11-Oct-2025	✓	**24-Apr-2025**	11-Oct-2025	✓
0990_OTH119_250414,	0990_POT126_250414,							
0990_OTH117_250414,	0990_POT125_250414,							
0990_POT198_250414,	0990_POT124_250414,							
0990_POT114_250414,	0990_OTH118_250414							
HDPE (no PTFE) (EP231X)								
0990_POT112_250414,	0990_POT113_250414,	**14-Apr-2025**	**22-Apr-2025**	11-Oct-2025	✓	**24-Apr-2025**	11-Oct-2025	✓
0990_POT120_250414,	0990_QC100_250414,							
0990_QC300_250414,	0990_QC400_250414,							
0990_QC500_250414,	0990_QC101_250414							
HDPE (no PTFE) (EP231X-LL)								
0990_POT130_250415,	0990_POT201_250415,	**15-Apr-2025**	**16-Apr-2025**	12-Oct-2025	✓	**24-Apr-2025**	12-Oct-2025	✓
0990_POT127_250415								
HDPE (no PTFE) (EP231X)								
0990_POT121_250415,	0990_MW808_250415,	**15-Apr-2025**	**22-Apr-2025**	12-Oct-2025	✓	**24-Apr-2025**	12-Oct-2025	✓
0990_MW809_250415,	0990_MW810_250415,							
0990_MW811_250415,	0990_MW812_250415,							
0990_MW813_250415,	0990_QC301_250415,							
0990_QC401_250415,	0990_QC102_250415							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X-LL)								
0990_POT128_250414,	0990_POT129_250414,	**14-Apr-2025**	**16-Apr-2025**	11-Oct-2025	✓	**24-Apr-2025**	11-Oct-2025	✓
0990_OTH119_250414,	0990_POT126_250414,							
0990_OTH117_250414,	0990_POT125_250414,							
0990_POT198_250414,	0990_POT124_250414,							
0990_POT114_250414,	0990_OTH118_250414							
HDPE (no PTFE) (EP231X)								
0990_POT112_250414,	0990_POT113_250414,	**14-Apr-2025**	**22-Apr-2025**	11-Oct-2025	✓	**24-Apr-2025**	11-Oct-2025	✓
0990_POT120_250414,	0990_QC100_250414,							
0990_QC300_250414,	0990_QC400_250414,							
0990_QC500_250414,	0990_QC101_250414							
HDPE (no PTFE) (EP231X-LL)								
0990_POT130_250415,	0990_POT201_250415,	**15-Apr-2025**	**16-Apr-2025**	12-Oct-2025	✓	**24-Apr-2025**	12-Oct-2025	✓
0990_POT127_250415								
HDPE (no PTFE) (EP231X)								
0990_POT121_250415,	0990_MW808_250415,	**15-Apr-2025**	**22-Apr-2025**	12-Oct-2025	✓	**24-Apr-2025**	12-Oct-2025	✓
0990_MW809_250415,	0990_MW810_250415,							
0990_MW811_250415,	0990_MW812_250415,							
0990_MW813_250415,	0990_QC301_250415,							
0990_QC401_250415,	0990_QC102_250415							
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X-LL)								
0990_POT128_250414,	0990_POT129_250414,	**14-Apr-2025**	**16-Apr-2025**	11-Oct-2025	✓	**24-Apr-2025**	11-Oct-2025	✓
0990_OTH119_250414,	0990_POT126_250414,							
0990_OTH117_250414,	0990_POT125_250414,							
0990_POT198_250414,	0990_POT124_250414,							
0990_POT114_250414,	0990_OTH118_250414							
HDPE (no PTFE) (EP231X)								
0990_POT112_250414,	0990_POT113_250414,	**14-Apr-2025**	**22-Apr-2025**	11-Oct-2025	✓	**24-Apr-2025**	11-Oct-2025	✓
0990_POT120_250414,	0990_QC100_250414,							
0990_QC300_250414,	0990_QC400_250414,							
0990_QC500_250414,	0990_QC101_250414							
HDPE (no PTFE) (EP231X-LL)								
0990_POT130_250415,	0990_POT201_250415,	**15-Apr-2025**	**16-Apr-2025**	12-Oct-2025	✓	**24-Apr-2025**	12-Oct-2025	✓
0990_POT127_250415								
HDPE (no PTFE) (EP231X)								
0990_POT121_250415,	0990_MW808_250415,	**15-Apr-2025**	**22-Apr-2025**	12-Oct-2025	✓	**24-Apr-2025**	12-Oct-2025	✓
0990_MW809_250415,	0990_MW810_250415,							
0990_MW811_250415,	0990_MW812_250415,							
0990_MW813_250415,	0990_QC301_250415,							
0990_QC401_250415,	0990_QC102_250415							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
0990_POT128_250414,	0990_POT129_250414,	**14-Apr-2025**	**16-Apr-2025**	11-Oct-2025	✓	**24-Apr-2025**	11-Oct-2025	✓
0990_OTH119_250414,	0990_POT126_250414,							
0990_OTH117_250414,	0990_POT125_250414,							
0990_POT198_250414,	0990_POT124_250414,							
0990_POT114_250414,	0990_OTH118_250414							
HDPE (no PTFE) (EP231X)								
0990_POT112_250414,	0990_POT113_250414,	**14-Apr-2025**	**22-Apr-2025**	11-Oct-2025	✓	**24-Apr-2025**	11-Oct-2025	✓
0990_POT120_250414,	0990_QC100_250414,							
0990_QC300_250414,	0990_QC400_250414,							
0990_QC500_250414,	0990_QC101_250414							
HDPE (no PTFE) (EP231X-LL)								
0990_POT130_250415,	0990_POT201_250415,	**15-Apr-2025**	**16-Apr-2025**	12-Oct-2025	✓	**24-Apr-2025**	12-Oct-2025	✓
0990_POT127_250415								
HDPE (no PTFE) (EP231X)								
0990_POT121_250415,	0990_MW808_250415,	**15-Apr-2025**	**22-Apr-2025**	12-Oct-2025	✓	**24-Apr-2025**	12-Oct-2025	✓
0990_MW809_250415,	0990_MW810_250415,							
0990_MW811_250415,	0990_MW812_250415,							
0990_MW813_250415,	0990_QC301_250415,							
0990_QC401_250415,	0990_QC102_250415							
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X-LL)								
0990_POT128_250414,	0990_POT129_250414,	**14-Apr-2025**	**16-Apr-2025**	11-Oct-2025	✓	**24-Apr-2025**	11-Oct-2025	✓
0990_OTH119_250414,	0990_POT126_250414,							
0990_OTH117_250414,	0990_POT125_250414,							
0990_POT198_250414,	0990_POT124_250414,							
0990_POT114_250414,	0990_OTH118_250414							
HDPE (no PTFE) (EP231X)								
0990_POT112_250414,	0990_POT113_250414,	**14-Apr-2025**	**22-Apr-2025**	11-Oct-2025	✓	**24-Apr-2025**	11-Oct-2025	✓
0990_POT120_250414,	0990_QC100_250414,							
0990_QC300_250414,	0990_QC400_250414,							
0990_QC500_250414,	0990_QC101_250414							
HDPE (no PTFE) (EP231X-LL)								
0990_POT130_250415,	0990_POT201_250415,	**15-Apr-2025**	**16-Apr-2025**	12-Oct-2025	✓	**24-Apr-2025**	12-Oct-2025	✓
0990_POT127_250415								
HDPE (no PTFE) (EP231X)								
0990_POT121_250415,	0990_MW808_250415,	**15-Apr-2025**	**22-Apr-2025**	12-Oct-2025	✓	**24-Apr-2025**	12-Oct-2025	✓
0990_MW809_250415,	0990_MW810_250415,							
0990_MW811_250415,	0990_MW812_250415,							
0990_MW813_250415,	0990_QC301_250415,							
0990_QC401_250415,	0990_QC102_250415							

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	0	13	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	38	**7.89**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	38	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	38	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	0	13	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	38	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction (SPE) followed by negative mode LC-ESI-MS/MS using MRM and isotope dilution or internal standard quantitation. Isotope dilution standards (where commercially available) and surrogates are added to the sample container. The entire contents are transferred to a weak anion exchange (WAX) solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Data quality objectives for internal standard recoveries are based on US EPA method 1633.
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction (SPE) followed by negative mode LC-ESI-MS/MS using MRM and isotope dilution or internal standard quantitation. Isotope dilution standards (where commercially available) and surrogates are added to the sample container. The entire contents are transferred to a weak anion exchange (WAX) solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Data quality objectives for internal standard recoveries are based on US EPA method 1633.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

Australian Government
Department of Industry, Science and Resources

National Measurement Institute

SAMPLE RECEIPT NOTIFICATION

CUSTOMER DETAILS

Attention: [redacted]

Customer: AECOM SERVICES PTY LTD

Address: [redacted]

Email:

Telephone:

LABORATORY DETAILS

Lab: National Measurement Institute

Contact: Client Services

Address: [redacted]

Email:

Telephone:

SAMPLE DETAILS

NMI Job Name: AECO09/250221/1

Total No. of Samples: 3

LRNs	Estimated Report Date	Customer Sample ID	Lab Sample Description
N25/002651	28-FEB-2025	0990_QC200_250217	WATER 17/02/2025
N25/002652	28-FEB-2025	0990_QC201_250217	WATER 17/02/2025

SAMPLE RECEIVED CONDITION

Date samples received:	21-FEB-2025
Sample received in good order:	Yes
NMI Quotation no. provided:	
Client purchase order number:	60676801/70301
Temperature of samples:	Chilled
Comments:	
Mode of Delivery:	

Additional Terms and Conditions

Incomplete / unclear information about samples or required testing will delay the start of the analysis work.

If you require your Purchase Order (PO) number to be included on our invoice, please provide the number during sample submission and before the completion of work to avoid unnecessary delays and/or additional processing/handling fees.

Alterations to Client requirements requested after commencement of testing may incur charges.

The lodgement of an order or receipt of samples for NMI services referenced in this Sample Receipt Notification constitutes an acceptence of the current version of NMI Terms and Conditions or other applicable Terms referenced in the NMI Quotation. NMI Terms and Conditions are available on the web at https://www.industry.gov.au/client-services/testing-and-analysis-services/chemical-and-biological-analysis-services-terms-and-conditions

Australian Government

National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO09/250221/1 **Sample Matrix:** Liquid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		ug/L	ug/L	ug/L	ug/L	%	%	%
PFBA (375-22-4)	NR70	0.05	<0.05	NA	NA	NA	131	NA
PFPeA (2706-90-3)	NR70	0.02	<0.02	NA	NA	NA	104	NA
PFHxA (307-24-4)	NR70	0.01	<0.01	NA	NA	NA	104	NA
PFHpA (375-85-9)	NR70	0.01	<0.01	NA	NA	NA	105	NA
PFOA (335-67-1)	NR70	0.01	<0.01	NA	NA	NA	111	NA
PFNA (375-95-1)	NR70	0.01	<0.01	NA	NA	NA	110	NA
PFDA (335-76-2)	NR70	0.01	<0.01	NA	NA	NA	86	NA
PFUdA (2058-94-8)	NR70	0.01	<0.01	NA	NA	NA	107	NA
PFDoA (307-55-1)	NR70	0.01	<0.01	NA	NA	NA	107	NA
PFTrDA (72629-94-8)	NR70	0.02	<0.02	NA	NA	NA	96	NA
PFTeDA (376-06-7)	NR70	0.02	<0.02	NA	NA	NA	113	NA
PFHxDA (67905-19-5)	NR70	0.02	<0.02	NA	NA	NA	109	NA
PFODA (16517-11-6)	NR70	0.05	<0.05	NA	NA	NA	107	NA
FOUEA (70887-84-2)	NR70	0.01	<0.01	NA	NA	NA	106	NA
PFBS (375-73-5)	NR70	0.01	<0.01	NA	NA	NA	105	NA
PFPeS (2706-91-4)	NR70	0.01	<0.01	NA	NA	NA	102	NA
PFHxS (355-46-4)	NR70	0.01	<0.01	NA	NA	NA	101	NA
PFHpS (375-92-8)	NR70	0.01	<0.01	NA	NA	NA	101	NA
PFOS (1763-23-1)	NR70	0.02	<0.02	NA	NA	NA	86	NA
PFNS (68259-12-1)	NR70	0.01	<0.01	NA	NA	NA	109	NA
PFDS (335-77-3)	NR70	0.01	<0.01	NA	NA	NA	98	NA
PFOSA (754-91-6)	NR70	0.01	<0.01	NA	NA	NA	94	NA
N-MeFOSA (31506-32-8)	NR70	0.02	<0.02	NA	NA	NA	97	NA
N-EtFOSA (4151-50-2)	NR70	0.02	<0.02	NA	NA	NA	103	NA
N-MeFOSAA (2355-31-9)	NR70	0.01	<0.01	NA	NA	NA	105	NA
N-EtFOSAA(2991-50-6)	NR70	0.01	<0.01	NA	NA	NA	97	NA
N-MeFOSE (24448-09-7)	NR70	0.05	<0.05	NA	NA	NA	81	NA
N-EtFOSE (1691-99-2)	NR70	0.05	<0.05	NA	NA	NA	111	NA
4:2 FTS (757124-72-4)	NR70	0.01	<0.01	NA	NA	NA	115	NA
6:2 FTS (27619-97-2)	NR70	0.01	<0.01	NA	NA	NA	117	NA
8:2 FTS (39108-34-4)	NR70	0.01	<0.01	NA	NA	NA	101	NA
10:2 FTS (120226-60-0)	NR70	0.01	<0.01	NA	NA	NA	84	NA
8:2 diPAP (678-41-1)	NR70	0.02	<0.02	NA	NA	NA	94	NA

Results expressed in percentage (%) or ug/L wherever appropriate.
Acceptable Spike recovery is 50-150%.
Maximum acceptable RPDs on spikes and duplicates is 40%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference.

Signed: [redacted]

Organics Manager, NMI-North Ryde

Date: **28/02/2025**

[redacted]

Australian Government
Department of Industry, Science and Resources

National Measurement Institute

NATA

REPORT OF ANALYSIS

Report No. RN1456997

Client	: AECOM SERVICES PTY LTD LEVEL 3 / 9 CAVENAGH STREET DARWIN NT 800	**Job No.**	: AECO09/250221/1
		Quote No.	: QT-02294
		Order No.	: 60676801_70301
		Date Received	: 21-FEB-2025
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: NT_0990_PFASOMP_25		
For Follow up enquiries	: ASB@measurement.gov.au	**Phone**	: 1300 722 845

Lab Reg No.	Sample Ref	Sample Description
N25/002651	0990_QC200_250217	WATER 17/02/2025
N25/002652	0990_QC201_250217	WATER 17/02/2025
N25/002653	0990_QC202_250218	WATER 18/02/2025

Lab Reg No.		N25/002651	N25/002652	N25/002653		
Date Sampled		17-FEB-2025	17-FEB-2025	18-FEB-2025		
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	ug/L	<0.05	<0.05	<0.05		NR70
PFPeA (2706-90-3)	ug/L	<0.02	<0.02	<0.02		NR70
PFHxA (307-24-4)	ug/L	<0.01	<0.01	<0.01		NR70
PFHpA (375-85-9)	ug/L	<0.01	<0.01	<0.01		NR70
PFOA (335-67-1)	ug/L	<0.01	<0.01	<0.01		NR70
PFNA (375-95-1)	ug/L	<0.01	<0.01	<0.01		NR70
PFDA (335-76-2)	ug/L	<0.01	<0.01	<0.01		NR70
PFUdA (2058-94-8)	ug/L	<0.01	<0.01	<0.01		NR70
PFDoA (307-55-1)	ug/L	<0.01	<0.01	<0.01		NR70
PFTrDA (72629-94-8)	ug/L	<0.02	<0.02	<0.02		NR70
PFTeDA (376-06-7)	ug/L	<0.02	<0.02	<0.02		NR70
PFHxDA (67905-19-5)	ug/L	<0.02	<0.02	<0.02		NR70
PFODA (16517-11-6)	ug/L	<0.05	<0.05	<0.05		NR70
FOUEA (70887-84-2)	ug/L	<0.01	<0.01	<0.01		NR70
PFDS (335-77-3)	ug/L	<0.01	<0.01	<0.01		NR70
PFPeS (2706-91-4)	ug/L	<0.01	<0.01	<0.01		NR70
PFHxS (355-46-4)	ug/L	<0.01	<0.01	<0.01		NR70
PFHpS (375-92-8)	ug/L	<0.01	<0.01	<0.01		NR70
PFOS (1763-23-1)	ug/L	<0.02	<0.02	<0.02		NR70
PFNS (68259-12-1)	ug/L	<0.01	<0.01	<0.01		NR70
PFBS (375-73-5)	ug/L	<0.01	<0.01	<0.01		NR70
PFOSA (754-91-6)	ug/L	<0.01	<0.01	<0.01		NR70
N-MeFOSA (31506-32-8)	ug/L	<0.02	<0.02	<0.02		NR70
N-EtFOSA (4151-50-2)	ug/L	<0.02	<0.02	<0.02		NR70
N-MeFOSAA (2355-31-9)	ug/L	<0.01	<0.01	<0.01		NR70
N-EtFOSAA(2991-50-6)	ug/L	<0.01	<0.01	<0.01		NR70
N-MeFOSE (24448-09-7)	ug/L	<0.05	<0.05	<0.05		NR70
N-EtFOSE (1691-99-2)	ug/L	<0.05	<0.05	<0.05		NR70

REPORT OF ANALYSIS

Report No. RN1456997

Lab Reg No.		N25/002651	N25/002652	N25/002653		
Date Sampled		17-FEB-2025	17-FEB-2025	18-FEB-2025		
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
4:2 FTS (757124-72-4)	ug/L	<0.01	<0.01	<0.01		NR70
6:2 FTS (27619-97-2)	ug/L	<0.01	<0.01	<0.01		NR70
8:2 FTS (39108-34-4)	ug/L	<0.01	<0.01	<0.01		NR70
10:2 FTS (120226-60-0)	ug/L	<0.01	<0.01	<0.01		NR70
8:2 diPAP (678-41-1)	ug/L	<0.02	<0.02	<0.02		NR70
PFBA (Surrogate Recovery)	%	91	91	90		NR70
PFPeA (Surrogate Recovery)	%	110	103	102		NR70
PFHxA (Surrogate Recovery)	%	100	95	95		NR70
PFHpA (Surrogate Recovery)	%	91	95	87		NR70
PFOA (Surrogate Recovery)	%	84	90	80		NR70
PFNA (Surrogate Recovery)	%	87	91	90		NR70
PFDA (Surrogate Recovery)	%	94	98	90		NR70
PFUdA (Surrogate Recovery)	%	92	104	96		NR70
PFDoA (Surrogate Recovery)	%	92	99	95		NR70
PFTeDA (Surrogate Recovery)	%	89	103	85		NR70
PFHxDA (Surrogate Recovery)	%	90	95	83		NR70
FOUEA (Surrogate Recovery)	%	91	89	85		NR70
PFBS (Surrogate Recovery)	%	102	97	93		NR70
PFHxS (Surrogate Recovery)	%	84	85	81		NR70
PFOS (Surrogate Recovery)	%	88	94	87		NR70
PFOSA (Surrogate Recovery)	%	77	89	85		NR70
N-MeFOSA (Surrogate Recovery)	%	68	69	64		NR70
N-EtFOSA (Surrogate Recovery)	%	65	65	62		NR70
N-MeFOSAA (Surrogate Recovery)	%	84	99	85		NR70
N-EtFOSAA (Surrogate Recovery)	%	94	100	94		NR70
N-MeFOSE (Surrogate Recovery)	%	82	86	80		NR70
N-EtFOSE (Surrogate Recovery)	%	71	76	66		NR70
4:2 FTS (Surrogate Recovery)	%	75	65	65		NR70
6:2 FTS (Surrogate Recovery)	%	79	65	71		NR70
8:2 FTS (Surrogate Recovery)	%	66	73	67		NR70
8:2 diPAP (Surrogate Recovery)	%	82	114	88		NR70
Dates						
Date extracted		25-FEB-2025	25-FEB-2025	25-FEB-2025		
Date analysed		25-FEB-2025	25-FEB-2025	25-FEB-2025		

N25/002651
to
N24/002653

REPORT OF ANALYSIS

PFOS and PFHxS are quantified using a combined branched and linear standard,
linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.

[redacted]

Organics - NSW
Accreditation No. 198

28-FEB-2025

WORLD RECOGNISED
ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

Measurement Uncertainty is available upon request.

Note: Sampling date(s) have been provided by the client.
The testing was undertaken at: [redacted]

Australian Government
Department of Industry, Science and Resources

National Measurement Institute

SAMPLE RECEIPT NOTIFICATION

CUSTOMER DETAILS

Attention: [redacted]

Customer: AECOM AUSTRALIA PTY LTD

Address: Level 3
NT 0800

Email: [redacted]

Telephone:

LABORATORY DETAILS

Lab: National Measurement Institute

Contact: Client Services

Address: [redacted]

Email:

Telephone:

SAMPLE DETAILS

NMI Job Name: AECO11/250327/1

Total No. of Samples: 2

LRNs	Estimated Report Date	Customer Sample ID	Lab Sample Description
N25/004722	3-APR-2025	0990_QC200_250317	WATER 17/03/2025
N25/004723	3-APR-2025	0990_QC201_250317	WATER 17/03/2025

[redacted]

SAMPLE RECEIVED CONDITION

Date samples received:	27-MAR-2025
Sample received in good order:	Yes
NMI Quotation no. provided:	NT_0990_PFASOMP_25
Client purchase order number:	60676801/10511
Temperature of samples:	Chilled
Comments:	
Mode of Delivery:	

Additional Terms and Conditions

Incomplete / unclear information about samples or required testing will delay the start of the analysis work.

If you require your Purchase Order (PO) number to be included on our invoice, please provide the number during sample submission and before the completion of work to avoid unnecessary delays and/or additional processing/handling fees.

Alterations to Client requirements requested after commencement of testing may incur charges.

The lodgement of an order or receipt of samples for NMI services referenced in this Sample Receipt Notification constitutes an acceptence of the current version of NMI Terms and Conditions or other applicable Terms referenced in the NMI Quotation. NMI Terms and Conditions are available on the web at https://www.industry.gov.au/client-services/testing-and-analysis-services/chemical-and-biological-analysis-services-terms-and-conditions

Australian Government
National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO09/250327/1 **Sample Matrix:** Liquid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		ug/L	ug/L	ug/L	ug/L	%	%	%
PFBA (375-22-4)	NR70	0.05	<0.05	NA	NA	NA	138	NA
PFPeA (2706-90-3)	NR70	0.02	<0.02	NA	NA	NA	115	NA
PFHxA (307-24-4)	NR70	0.01	<0.01	NA	NA	NA	110	NA
PFHpA (375-85-9)	NR70	0.01	<0.01	NA	NA	NA	108	NA
PFOA (335-67-1)	NR70	0.01	<0.01	NA	NA	NA	109	NA
PFNA (375-95-1)	NR70	0.01	<0.01	NA	NA	NA	112	NA
PFDA (335-76-2)	NR70	0.01	<0.01	NA	NA	NA	105	NA
PFUdA (2058-94-8)	NR70	0.01	<0.01	NA	NA	NA	110	NA
PFDoA (307-55-1)	NR70	0.01	<0.01	NA	NA	NA	117	NA
PFTrDA (72629-94-8)	NR70	0.02	<0.02	NA	NA	NA	105	NA
PFTeDA (376-06-7)	NR70	0.02	<0.02	NA	NA	NA	123	NA
PFHxDA (67905-19-5)	NR70	0.02	<0.02	NA	NA	NA	111	NA
PFODA (16517-11-6)	NR70	0.05	<0.05	NA	NA	NA	92	NA
FOUEA (70887-84-2)	NR70	0.01	<0.01	NA	NA	NA	113	NA
PFBS (375-73-5)	NR70	0.01	<0.01	NA	NA	NA	113	NA
PFPeS (2706-91-4)	NR70	0.01	<0.01	NA	NA	NA	108	NA
PFHxS (355-46-4)	NR70	0.01	<0.01	NA	NA	NA	115	NA
PFHpS (375-92-8)	NR70	0.01	<0.01	NA	NA	NA	118	NA
PFOS (1763-23-1)	NR70	0.02	<0.02	NA	NA	NA	113	NA
PFNS (68259-12-1)	NR70	0.01	<0.01	NA	NA	NA	115	NA
PFDS (335-77-3)	NR70	0.01	<0.01	NA	NA	NA	109	NA
PFOSA (754-91-6)	NR70	0.01	<0.01	NA	NA	NA	108	NA
N-MeFOSA (31506-32-8)	NR70	0.02	<0.02	NA	NA	NA	122	NA
N-EtFOSA (4151-50-2)	NR70	0.02	<0.02	NA	NA	NA	113	NA
N-MeFOSAA (2355-31-9)	NR70	0.01	<0.01	NA	NA	NA	113	NA
N-EtFOSAA(2991-50-6)	NR70	0.01	<0.01	NA	NA	NA	112	NA
N-MeFOSE (24448-09-7)	NR70	0.05	<0.05	NA	NA	NA	102	NA
N-EtFOSE (1691-99-2)	NR70	0.05	<0.05	NA	NA	NA	125	NA
4:2 FTS (757124-72-4)	NR70	0.01	<0.01	NA	NA	NA	106	NA
6:2 FTS (27619-97-2)	NR70	0.01	<0.01	NA	NA	NA	123	NA
8:2 FTS (39108-34-4)	NR70	0.01	<0.01	NA	NA	NA	117	NA
10:2 FTS (120226-60-0)	NR70	0.01	<0.01	NA	NA	NA	117	NA
8:2 diPAP (678-41-1)	NR70	0.02	<0.02	NA	NA	NA	129	NA

Results expressed in percentage (%) or ug/L wherever appropriate.
Acceptable Spike recovery is 50-150%.
Maximum acceptable RPDs on spikes and duplicates is 40%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference.

Signed: [redacted]

Organics Manager, NMI-North Ryde

Date: **3/04/2025**

Australian Government
Department of Industry, Science and Resources

National Measurement Institute

NATA

REPORT OF ANALYSIS

Report No. RN1460704

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO11/250327/1
	[redacted]	**Quote No.**	: QT-02294
		Order No.	: 60676801/10511
		Date Received	: 27-MAR-2025
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: NT_0990_PFASOMP_25		
For Follow up enquiries	: [redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N25/004722	0990_QC200_250317	WATER 17/03/2025
N25/004723	0990_QC201_250317	WATER 17/03/2025

Lab Reg No.		N25/004722	N25/004723			
Date Sampled		17-MAR-2025	17-MAR-2025			
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	ug/L	<0.05	<0.05			NR70
PFPeA (2706-90-3)	ug/L	<0.02	<0.02			NR70
PFHxA (307-24-4)	ug/L	<0.01	0.061			NR70
PFHpA (375-85-9)	ug/L	<0.01	<0.01			NR70
PFOA (335-67-1)	ug/L	<0.01	0.014			NR70
PFNA (375-95-1)	ug/L	<0.01	<0.01			NR70
PFDA (335-76-2)	ug/L	<0.01	<0.01			NR70
PFUdA (2058-94-8)	ug/L	<0.01	<0.01			NR70
PFDoA (307-55-1)	ug/L	<0.01	<0.01			NR70
PFTrDA (72629-94-8)	ug/L	<0.02	<0.02			NR70
PFTeDA (376-06-7)	ug/L	<0.02	<0.02			NR70
PFHxDA (67905-19-5)	ug/L	<0.02	<0.02			NR70
PFODA (16517-11-6)	ug/L	<0.05	<0.05			NR70
FOUEA (70887-84-2)	ug/L	<0.01	<0.01			NR70
PFDS (335-77-3)	ug/L	<0.01	<0.01			NR70
PFPeS (2706-91-4)	ug/L	<0.01	0.035			NR70
PFHxS (355-46-4)	ug/L	<0.01	0.20			NR70
PFHpS (375-92-8)	ug/L	<0.01	<0.01			NR70
PFOS (1763-23-1)	ug/L	<0.02	0.23			NR70
PFNS (68259-12-1)	ug/L	<0.01	<0.01			NR70
PFBS (375-73-5)	ug/L	<0.01	0.034			NR70
PFOSA (754-91-6)	ug/L	<0.01	<0.01			NR70
N-MeFOSA (31506-32-8)	ug/L	<0.02	<0.02			NR70
N-EtFOSA (4151-50-2)	ug/L	<0.02	<0.02			NR70
N-MeFOSAA (2355-31-9)	ug/L	<0.01	<0.01			NR70
N-EtFOSAA(2991-50-6)	ug/L	<0.01	<0.01			NR70
N-MeFOSE (24448-09-7)	ug/L	<0.05	<0.05			NR70
N-EtFOSE (1691-99-2)	ug/L	<0.05	<0.05			NR70
4:2 FTS (757124-72-4)	ug/L	<0.01	<0.01			NR70

REPORT OF ANALYSIS

Report No. RN1460704

Lab Reg No.		N25/004722	N25/004723			
Date Sampled		17-MAR-2025	17-MAR-2025			
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
6:2 FTS (27619-97-2)	ug/L	<0.01	<0.01			NR70
8:2 FTS (39108-34-4)	ug/L	<0.01	<0.01			NR70
10:2 FTS (120226-60-0)	ug/L	<0.01	<0.01			NR70
8:2 diPAP (678-41-1)	ug/L	<0.02	<0.02			NR70
PFBA (Surrogate Recovery)	%	98	102			NR70
PFPeA (Surrogate Recovery)	%	105	93			NR70
PFHxA (Surrogate Recovery)	%	92	96			NR70
PFHpA (Surrogate Recovery)	%	93	99			NR70
PFOA (Surrogate Recovery)	%	98	100			NR70
PFNA (Surrogate Recovery)	%	88	93			NR70
PFDA (Surrogate Recovery)	%	86	92			NR70
PFUdA (Surrogate Recovery)	%	81	89			NR70
PFDoA (Surrogate Recovery)	%	79	83			NR70
PFTeDA (Surrogate Recovery)	%	67	68			NR70
PFHxDA (Surrogate Recovery)	%	87	81			NR70
FOUEA (Surrogate Recovery)	%	78	85			NR70
PFBS (Surrogate Recovery)	%	98	101			NR70
PFHxS (Surrogate Recovery)	%	93	96			NR70
PFOS (Surrogate Recovery)	%	91	95			NR70
PFOSA (Surrogate Recovery)	%	73	81			NR70
N-MeFOSA (Surrogate Recovery)	%	63	74			NR70
N-EtFOSA (Surrogate Recovery)	%	62	70			NR70
N-MeFOSAA (Surrogate Recovery)	%	72	85			NR70
N-EtFOSAA (Surrogate Recovery)	%	77	90			NR70
N-MeFOSE (Surrogate Recovery)	%	73	79			NR70
N-EtFOSE (Surrogate Recovery)	%	66	76			NR70
4:2 FTS (Surrogate Recovery)	%	73	85			NR70
6:2 FTS (Surrogate Recovery)	%	74	80			NR70
8:2 FTS (Surrogate Recovery)	%	72	77			NR70
8:2 diPAP (Surrogate Recovery)	%	69	58			NR70
Dates						
Date extracted		2-APR-2025	2-APR-2025			
Date analysed		2-APR-2025	2-APR-2025			

N25/004722
to
N25/004723

PFOS and PFHxS are quantified using a combined branched and linear standard,

REPORT OF ANALYSIS

linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.

[redacted]

Organics - NSW
Accreditation No. 198

07-APR-2025

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This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

Measurement Uncertainty is available upon request.

Note: Sampling date(s) have been provided by the client.
The testing was undertaken at: [redacted]

Australian Government
National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO09/250417_1 **Sample Matrix:** Liquid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		ug/L	ug/L	ug/L	ug/L	%	%	%
PFBA (375-22-4)	NR70	0.05	<0.05	NA	NA	NA	139	NA
PFPeA (2706-90-3)	NR70	0.02	<0.02	NA	NA	NA	124	NA
PFHxA (307-24-4)	NR70	0.01	<0.01	NA	NA	NA	124	NA
PFHpA (375-85-9)	NR70	0.01	<0.01	NA	NA	NA	114	NA
PFOA (335-67-1)	NR70	0.01	<0.01	NA	NA	NA	118	NA
PFNA (375-95-1)	NR70	0.01	<0.01	NA	NA	NA	123	NA
PFDA (335-76-2)	NR70	0.01	<0.01	NA	NA	NA	121	NA
PFUdA (2058-94-8)	NR70	0.01	<0.01	NA	NA	NA	116	NA
PFDoA (307-55-1)	NR70	0.01	<0.01	NA	NA	NA	130	NA
PFTrDA (72629-94-8)	NR70	0.02	<0.02	NA	NA	NA	118	NA
PFTeDA (376-06-7)	NR70	0.02	<0.02	NA	NA	NA	129	NA
PFHxDA (67905-19-5)	NR70	0.02	<0.02	NA	NA	NA	116	NA
PFODA (16517-11-6)	NR70	0.05	<0.05	NA	NA	NA	108	NA
FOUEA (70887-84-2)	NR70	0.01	<0.01	NA	NA	NA	115	NA
PFBS (375-73-5)	NR70	0.01	<0.01	NA	NA	NA	124	NA
PFPeS (2706-91-4)	NR70	0.01	<0.01	NA	NA	NA	120	NA
PFHxS (355-46-4)	NR70	0.01	<0.01	NA	NA	NA	119	NA
PFHpS (375-92-8)	NR70	0.01	<0.01	NA	NA	NA	123	NA
PFOS (1763-23-1)	NR70	0.02	<0.02	NA	NA	NA	120	NA
PFNS (68259-12-1)	NR70	0.01	<0.01	NA	NA	NA	128	NA
PFDS (335-77-3)	NR70	0.01	<0.01	NA	NA	NA	134	NA
PFOSA (754-91-6)	NR70	0.01	<0.01	NA	NA	NA	121	NA
N-MeFOSA (31506-32-8)	NR70	0.02	<0.02	NA	NA	NA	121	NA
N-EtFOSA (4151-50-2)	NR70	0.02	<0.02	NA	NA	NA	114	NA
N-MeFOSAA (2355-31-9)	NR70	0.01	<0.01	NA	NA	NA	110	NA
N-EtFOSAA(2991-50-6)	NR70	0.01	<0.01	NA	NA	NA	118	NA
N-MeFOSE (24448-09-7)	NR70	0.05	<0.05	NA	NA	NA	103	NA
N-EtFOSE (1691-99-2)	NR70	0.05	<0.05	NA	NA	NA	126	NA
4:2 FTS (757124-72-4)	NR70	0.01	<0.01	NA	NA	NA	129	NA
6:2 FTS (27619-97-2)	NR70	0.01	<0.01	NA	NA	NA	138	NA
8:2 FTS (39108-34-4)	NR70	0.01	<0.01	NA	NA	NA	116	NA
10:2 FTS (120226-60-0)	NR70	0.01	<0.01	NA	NA	NA	105	NA
8:2 diPAP (678-41-1)	NR70	0.02	<0.02	NA	NA	NA	119	NA

Results expressed in percentage (%) or ug/L wherever appropriate.
Acceptable Spike recovery is 50-150%.
Maximum acceptable RPDs on spikes and duplicates is 40%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference.

Signed: [redacted]

Organics Manager, NMI-North Ryde

Date: **29/04/2025**

Australian Government
Department of Industry, Science and Resources

National Measurement Institute

NATA

REPORT OF ANALYSIS

Report No. RN1462878

Client	[redacted]	**Job No.**	: AECO11/250417
		Quote No.	: QT-02294
		Order No.	: 60676801_7_03_01
		Date Received	: 17-APR-2025
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: NT_0990_PFASOMP_25		
For Follow up enquiries	: [redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N25/006381	0990_QC200_250414	WATER SITE PRIVATE PROPERTY & COSSACK GME 14/04/25
N25/006382	0990_QC201_250414	WATER SITE PRIVATE PROPERTY & COSSACK GME 14/04/25
N25/006383	0990_QC202_250415	WATER SITE PRIVATE PROPERTY & COSSACK GME 15/04/25

Lab Reg No.		N25/006381	N25/006382	N25/006383		
Date Sampled		14-APR-2025	14-APR-2025	15-APR-2025		
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	ug/L	<0.05	<0.05	<0.05		NR70
PFPeA (2706-90-3)	ug/L	0.038	<0.02	<0.02		NR70
PFHxA (307-24-4)	ug/L	0.16	<0.01	<0.01		NR70
PFHpA (375-85-9)	ug/L	0.019	<0.01	<0.01		NR70
PFOA (335-67-1)	ug/L	0.041	<0.01	<0.01		NR70
PFNA (375-95-1)	ug/L	<0.01	<0.01	<0.01		NR70
PFDA (335-76-2)	ug/L	<0.01	<0.01	<0.01		NR70
PFUdA (2058-94-8)	ug/L	<0.01	<0.01	<0.01		NR70
PFDoA (307-55-1)	ug/L	<0.01	<0.01	<0.01		NR70
PFTrDA (72629-94-8)	ug/L	<0.02	<0.02	<0.02		NR70
PFTeDA (376-06-7)	ug/L	<0.02	<0.02	<0.02		NR70
PFHxDA (67905-19-5)	ug/L	<0.02	<0.02	<0.02		NR70
PFODA (16517-11-6)	ug/L	<0.05	<0.05	<0.05		NR70
FOUEA (70887-84-2)	ug/L	<0.01	<0.01	<0.01		NR70
PFDS (335-77-3)	ug/L	<0.01	<0.01	<0.01		NR70
PFPeS (2706-91-4)	ug/L	0.080	<0.01	<0.01		NR70
PFHxS (355-46-4)	ug/L	0.62	0.022	<0.01		NR70
PFHpS (375-92-8)	ug/L	0.020	<0.01	<0.01		NR70
PFOS (1763-23-1)	ug/L	0.90	0.034	0.021		NR70
PFNS (68259-12-1)	ug/L	<0.01	<0.01	<0.01		NR70
PFBS (375-73-5)	ug/L	0.085	<0.01	<0.01		NR70
PFOSA (754-91-6)	ug/L	<0.01	<0.01	<0.01		NR70
N-MeFOSA (31506-32-8)	ug/L	<0.02	<0.02	<0.02		NR70
N-EtFOSA (4151-50-2)	ug/L	<0.02	<0.02	<0.02		NR70
N-MeFOSAA (2355-31-9)	ug/L	<0.01	<0.01	<0.01		NR70

REPORT OF ANALYSIS

Report No. RN1462878

Lab Reg No.		N25/006381	N25/006382	N25/006383		
Date Sampled		14-APR-2025	14-APR-2025	15-APR-2025		
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
N-EtFOSAA(2991-50-6)	ug/L	<0.01	<0.01	<0.01		NR70
N-MeFOSE (24448-09-7)	ug/L	<0.05	<0.05	<0.05		NR70
N-EtFOSE (1691-99-2)	ug/L	<0.05	<0.05	<0.05		NR70
4:2 FTS (757124-72-4)	ug/L	<0.01	<0.01	<0.01		NR70
6:2 FTS (27619-97-2)	ug/L	<0.01	<0.01	0.062		NR70
8:2 FTS (39108-34-4)	ug/L	<0.01	<0.01	<0.01		NR70
10:2 FTS (120226-60-0)	ug/L	<0.01	<0.01	<0.01		NR70
8:2 diPAP (678-41-1)	ug/L	<0.02	<0.02	<0.02		NR70
PFBA (Surrogate Recovery)	%	61	68	67		NR70
PFPeA (Surrogate Recovery)	%	63	71	67		NR70
PFHxA (Surrogate Recovery)	%	65	67	65		NR70
PFHpA (Surrogate Recovery)	%	67	67	65		NR70
PFOA (Surrogate Recovery)	%	70	69	68		NR70
PFNA (Surrogate Recovery)	%	66	67	70		NR70
PFDA (Surrogate Recovery)	%	65	69	69		NR70
PFUdA (Surrogate Recovery)	%	59	70	71		NR70
PFDoA (Surrogate Recovery)	%	55	62	62		NR70
PFTeDA (Surrogate Recovery)	%	51	57	56		NR70
PFHxDA (Surrogate Recovery)	%	55	71	59		NR70
FOUEA (Surrogate Recovery)	%	55	58	57		NR70
PFBS (Surrogate Recovery)	%	71	67	68		NR70
PFHxS (Surrogate Recovery)	%	66	66	66		NR70
PFOS (Surrogate Recovery)	%	61	64	68		NR70
PFOSA (Surrogate Recovery)	%	48	54	55		NR70
N-MeFOSA (Surrogate Recovery)	%	38	51	43		NR70
N-EtFOSA (Surrogate Recovery)	%	38	49	43		NR70
N-MeFOSAA (Surrogate Recovery)	%	58	61	58		NR70
N-EtFOSAA (Surrogate Recovery)	%	57	63	61		NR70
N-MeFOSE (Surrogate Recovery)	%	45	57	54		NR70
N-EtFOSE (Surrogate Recovery)	%	41	53	50		NR70
4:2 FTS (Surrogate Recovery)	%	77	68	68		NR70
6:2 FTS (Surrogate Recovery)	%	62	57	64		NR70
8:2 FTS (Surrogate Recovery)	%	53	58	63		NR70
8:2 diPAP (Surrogate Recovery)	%	51	114	53		NR70
Dates						
Date extracted		24-APR-2025	24-APR-2025	24-APR-2025		
Date analysed		29-APR-2025	29-APR-2025	29-APR-2025		

N25/006381

REPORT OF ANALYSIS

to
N25/006383

PFOS and PFHxS are quantified using a combined branched and linear standard,
linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.

Selected PFAS surrogate recoveries are biased due to matrix effects.ô
Surrogate recoveries low for selected analytes - PFAS LORs not raised since S/N >10.

[redacted]

[redacted], Analyst
Organics - NSW
Accreditation No. 198

29-APR-2025

NATA
WORLD RECOGNISED
ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

Measurement Uncertainty is available upon request.

Note: Sampling date(s) have been provided by the client.
The testing was undertaken at: [redacted]

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2508367**
Amendment : **1**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_25	Page	: 1 of 4
Order number	: 60676801/1.05.11	Quote number	: ES2019AECOMAU0030 (SY/139/19 V3)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [redacted]		

Dates

Date Samples Received	: 26-Mar-2025 11:00	Issue Date	: 09-Apr-2025
Client Requested Due Date	: 09-Apr-2025	Scheduled Reporting Date	: **09-Apr-2025**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 25.0'C 28.3'C 29.9'C DRW 16.5'C 16.4'C 15.3'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 18 / 18

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- 27/03/2025: This is an updated SRN which indicates the Purchase Order for this work order.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **09/04/2025: This is an updated SRN indicating the request to report specific samples ES2508367-008 and 011 on a separate COA.**
- **QC Forward analysis will be conducted by NMI.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2508367-001	20-Mar-2025 00:00	0990_MW808_250320	✓
ES2508367-002	20-Mar-2025 00:00	0990_MW809_250320	✓
ES2508367-003	20-Mar-2025 00:00	0990_MW810_250320	✓
ES2508367-004	20-Mar-2025 00:00	0990_MW811_250320	✓
ES2508367-005	20-Mar-2025 00:00	0990_MW812_250320	✓
ES2508367-006	20-Mar-2025 00:00	0990_MW813_250320	✓
ES2508367-007	20-Mar-2025 00:00	0990_QC100_250320	✓
ES2508367-008	19-Mar-2025 00:00	0990_SW153_250319	✓
ES2508367-009	19-Mar-2025 00:00	0990_SW110_250319	✓
ES2508367-010	19-Mar-2025 00:00	0990_SW161_250319	✓
ES2508367-011	19-Mar-2025 00:00	0990_SW108_250319	✓
ES2508367-012	19-Mar-2025 00:00	0990_SW100_250319	✓
ES2508367-013	19-Mar-2025 00:00	0990_QC100_250319	✓
ES2508367-014	19-Mar-2025 00:00	0990_QC300_250319	✓
ES2508367-015	19-Mar-2025 00:00	0990_QC400_250319	✓
ES2508367-016	20-Mar-2025 00:00	0990_QC300_250320	✓
ES2508367-017	20-Mar-2025 00:00	0990_QC400_250320	✓
ES2508367-018	19-Mar-2025 00:00	0990_QC500_250319	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT) Email

esdat aecom-au

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
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- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
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[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
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- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2508367**	Page	: 1 of 11
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 26-Mar-2025 11:00
Order number	: 60676801/1.05.11	Date Analysis Commenced	: 26-Mar-2025
C-O-C number	: ----	Issue Date	: 31-Mar-2025 10:37
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3		
No. of samples received	: 18		
No. of samples analysed	: 18		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW808_250320	0990_MW809_250320	0990_MW810_250320	0990_MW811_250320	0990_MW812_250320
			Sampling date / time	20-Mar-2025 00:00	20-Mar-2025 00:00	20-Mar-2025 00:00	20-Mar-2025 00:00	20-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508367-001	ES2508367-002	ES2508367-003	ES2508367-004	ES2508367-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	**0.04**	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	**0.02**	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	**0.09**	**0.04**	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	**0.05**	**0.06**	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	**0.02**	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	**0.07**	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW808_250320	0990_MW809_250320	0990_MW810_250320	0990_MW811_250320	0990_MW812_250320
			Sampling date / time	20-Mar-2025 00:00	20-Mar-2025 00:00	20-Mar-2025 00:00	20-Mar-2025 00:00	20-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508367-001	ES2508367-002	ES2508367-003	ES2508367-004	ES2508367-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	**0.29**	**0.10**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	**0.14**	**0.10**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	**0.27**	**0.10**	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**98.3**	**98.5**	**94.4**	**97.6**	**97.9**
13C8-PFOA	----	0.02	%	**103**	**104**	**109**	**102**	**103**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW813_250320	0990_QC100_250320	0990_SW153_250319	0990_SW110_250319	0990_SW161_250319
			Sampling date / time	20-Mar-2025 00:00	20-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508367-006	ES2508367-007	ES2508367-008	ES2508367-009	ES2508367-010
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**0.03**	**0.04**	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	**0.03**	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.02**	**0.09**	**0.02**	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.05**	**0.06**	**0.02**	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	**0.02**	**0.02**	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	**0.08**	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	**0.04**	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**0.06**	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW813_250320	0990_QC100_250320	0990_SW153_250319	0990_SW110_250319	0990_SW161_250319
			Sampling date / time	20-Mar-2025 00:00	20-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508367-006	ES2508367-007	ES2508367-008	ES2508367-009	ES2508367-010
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.22**	**0.32**	**0.04**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.07**	**0.15**	**0.04**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.22**	**0.29**	**0.04**	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**102**	**102**	**100**	**100**	**104**
13C8-PFOA	----	0.02	%	**105**	**102**	**107**	**106**	**107**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_SW108_250319	0990_SW100_250319	0990_QC100_250319	0990_QC300_250319	0990_QC400_250319
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508367-011	ES2508367-012	ES2508367-013	ES2508367-014	ES2508367-015
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_SW108_250319	0990_SW100_250319	0990_QC100_250319	0990_QC300_250319	0990_QC400_250319
			Sampling date / time	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00	19-Mar-2025 00:00
Compound	CAS Number	LOR	Unit	ES2508367-011	ES2508367-012	ES2508367-013	ES2508367-014	ES2508367-015
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**99.5**	**99.6**	**102**	**99.8**	**95.1**
13C8-PFOA	----	0.02	%	**105**	**106**	**104**	**104**	**104**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC300_250320	0990_QC400_250320	0990_QC500_250319	----	----
			Sampling date / time	20-Mar-2025 00:00	20-Mar-2025 00:00	19-Mar-2025 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2508367-016	ES2508367-017	ES2508367-018	--------	--------
				Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC300_250320	0990_QC400_250320	0990_QC500_250319	----	----
			Sampling date / time	20-Mar-2025 00:00	20-Mar-2025 00:00	19-Mar-2025 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2508367-016	ES2508367-017	ES2508367-018	--------	--------
				Result	Result	Result	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**99.4**	**94.8**	**97.1**	----	----
13C8-PFOA	----	0.02	%	**101**	**102**	**101**	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2508367**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	[redacted]
Telephone	: ----	Telephone	[redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 26-Mar-2025
Order number	: 60676801/1.05.11	Date Analysis Commenced	: 26-Mar-2025
C-O-C number	: ----	Issue Date	: 31-Mar-2025
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3		
No. of samples received	: 18		
No. of samples analysed	: 18		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6467000)									
ES2508367-003	0990_MW810_250320	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.09	0.08	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.05	0.05	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.04	0.04	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.02	0.03	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2508367-011	0990_SW108_250319	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6467000)									
ES2508367-003	0990_MW810_250320	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.07	0.07	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6467000) - continued									
ES2508367-003	0990_MW810_250320	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2508367-011	0990_SW108_250319	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6467000)									
ES2508367-003	0990_MW810_250320	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2508367-011	0990_SW108_250319	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6467000)									
ES2508367-003	0990_MW810_250320	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2508367-011	0990_SW108_250319	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6467000)									
ES2508367-003	0990_MW810_250320	EP231X: Sum of PFAS	----	0.01	µg/L	0.29	0.29	0.0	0% - 20%
ES2508367-011	0990_SW108_250319	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6467000)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	87.1	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	80.7	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	78.3	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	94.6	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	81.3	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	83.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6467000)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	91.4	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	96.9	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	108	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	88.8	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	95.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	96.1	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	86.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.0	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	99.8	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6467000)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	85.6	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	121	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.9	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	88.2	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	92.7	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	89.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	96.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6467000)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6467000) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	105	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	96.4	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	85.9	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	78.4	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6467000)							
ES2508367-012	0990_SW100_250319	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	82.8	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	81.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	84.5	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	97.3	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	84.9	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	86.9	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6467000)							
ES2508367-012	0990_SW100_250319	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	91.9	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	101	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	97.4	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	106	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	88.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	92.0	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	96.8	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	86.6	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	105	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	86.0	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	99.6	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6467000)							
ES2508367-012	0990_SW100_250319	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	85.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	117	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	95.6	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	85.1	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6467000) - continued							
ES2508367-012	0990_SW100_250319	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	94.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	96.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	92.5	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6467000)							
ES2508367-012	0990_SW100_250319	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	107	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	86.0	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	91.1	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	86.1	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2508367**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 26-Mar-2025
Site	: ----	Issue Date	: 31-Mar-2025
Sampler	: [redacted]	No. of samples received	: 18
Order number	: 60676801/1.05.11	No. of samples analysed	: 18

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0990_SW153_250319,	0990_SW110_250319,	**19-Mar-2025**	**26-Mar-2025**	15-Sep-2025	✓	**31-Mar-2025**	15-Sep-2025	✓
0990_SW161_250319,	0990_SW108_250319,							
0990_SW100_250319,	0990_QC100_250319,							
0990_QC300_250319,	0990_QC400_250319,							
0990_QC500_250319								
HDPE (no PTFE) (EP231X)								
0990_MW808_250320,	0990_MW809_250320,	**20-Mar-2025**	**26-Mar-2025**	16-Sep-2025	✓	**28-Mar-2025**	16-Sep-2025	✓
0990_MW810_250320,	0990_MW811_250320,							
0990_MW812_250320								
HDPE (no PTFE) (EP231X)								
0990_MW813_250320,	0990_QC100_250320,	**20-Mar-2025**	**26-Mar-2025**	16-Sep-2025	✓	**31-Mar-2025**	16-Sep-2025	✓
0990_QC300_250320,	0990_QC400_250320							
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0990_SW153_250319,	0990_SW110_250319,	**19-Mar-2025**	**26-Mar-2025**	15-Sep-2025	✓	**31-Mar-2025**	15-Sep-2025	✓
0990_SW161_250319,	0990_SW108_250319,							
0990_SW100_250319,	0990_QC100_250319,							
0990_QC300_250319,	0990_QC400_250319,							
0990_QC500_250319								
HDPE (no PTFE) (EP231X)								
0990_MW808_250320,	0990_MW809_250320,	**20-Mar-2025**	**26-Mar-2025**	16-Sep-2025	✓	**28-Mar-2025**	16-Sep-2025	✓
0990_MW810_250320,	0990_MW811_250320,							
0990_MW812_250320								
HDPE (no PTFE) (EP231X)								
0990_MW813_250320,	0990_QC100_250320,	**20-Mar-2025**	**26-Mar-2025**	16-Sep-2025	✓	**31-Mar-2025**	16-Sep-2025	✓
0990_QC300_250320,	0990_QC400_250320							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X) 0990_SW153_250319, 0990_SW161_250319, 0990_SW100_250319, 0990_QC300_250319, 0990_QC500_250319	0990_SW110_250319, 0990_SW108_250319, 0990_QC100_250319, 0990_QC400_250319,	**19-Mar-2025**	**26-Mar-2025**	15-Sep-2025	✓	**31-Mar-2025**	15-Sep-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW808_250320, 0990_MW810_250320, 0990_MW812_250320	0990_MW809_250320, 0990_MW811_250320,	**20-Mar-2025**	**26-Mar-2025**	16-Sep-2025	✓	**28-Mar-2025**	16-Sep-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW813_250320, 0990_QC300_250320,	0990_QC100_250320, 0990_QC400_250320	**20-Mar-2025**	**26-Mar-2025**	16-Sep-2025	✓	**31-Mar-2025**	16-Sep-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X) 0990_SW153_250319, 0990_SW161_250319, 0990_SW100_250319, 0990_QC300_250319, 0990_QC500_250319	0990_SW110_250319, 0990_SW108_250319, 0990_QC100_250319, 0990_QC400_250319,	**19-Mar-2025**	**26-Mar-2025**	15-Sep-2025	✓	**31-Mar-2025**	15-Sep-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW808_250320, 0990_MW810_250320, 0990_MW812_250320	0990_MW809_250320, 0990_MW811_250320,	**20-Mar-2025**	**26-Mar-2025**	16-Sep-2025	✓	**28-Mar-2025**	16-Sep-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW813_250320, 0990_QC300_250320,	0990_QC100_250320, 0990_QC400_250320	**20-Mar-2025**	**26-Mar-2025**	16-Sep-2025	✓	**31-Mar-2025**	16-Sep-2025	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X) 0990_SW153_250319, 0990_SW161_250319, 0990_SW100_250319, 0990_QC300_250319, 0990_QC500_250319	0990_SW110_250319, 0990_SW108_250319, 0990_QC100_250319, 0990_QC400_250319,	**19-Mar-2025**	**26-Mar-2025**	15-Sep-2025	✓	**31-Mar-2025**	15-Sep-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW808_250320, 0990_MW810_250320, 0990_MW812_250320	0990_MW809_250320, 0990_MW811_250320,	**20-Mar-2025**	**26-Mar-2025**	16-Sep-2025	✓	**28-Mar-2025**	16-Sep-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW813_250320, 0990_QC300_250320,	0990_QC100_250320, 0990_QC400_250320	**20-Mar-2025**	**26-Mar-2025**	16-Sep-2025	✓	**31-Mar-2025**	16-Sep-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2509506**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	[redacted]	Address	: [redacted]
E-mail		E-mail	:
Telephone		Telephone	:
Facsimile	: ----	Facsimile	:
Project	: NT_0990_PFASOMP_25	Page	: 1 of 3
Order number	: 60676801/1.05.11	Quote number	: ES2019AECOMAU0030 (SY/139/19 V3)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [redacted]		

Dates

Date Samples Received	: 04-Apr-2025 13:30	Issue Date	: 04-Apr-2025
Client Requested Due Date	: 10-Apr-2025	Scheduled Reporting Date	: **10-Apr-2025**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 29.3'C 29.9'C 30.7'C
Receipt Detail	:	No. of samples received / analysed	: 11 / 11

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2509506-001	01-Apr-2025 00:00	0990_SW140_250401	✓
ES2509506-002	01-Apr-2025 00:00	0990_SW049_250401	✓
ES2509506-003	01-Apr-2025 00:00	0990_SW350_250401	✓
ES2509506-004	01-Apr-2025 00:00	0990_SW188_250401	✓
ES2509506-005	01-Apr-2025 00:00	0990_SW016_250401	✓
ES2509506-006	01-Apr-2025 00:00	0990_SW021_250401	✓
ES2509506-007	01-Apr-2025 00:00	0990_QC100_250401	✓
ES2509506-008	01-Apr-2025 00:00	0990_QC200_250401	✓
ES2509506-009	01-Apr-2025 00:00	0990_QC300_250401	✓
ES2509506-010	01-Apr-2025 00:00	0990_QC400_250401	✓
ES2509506-011	01-Apr-2025 00:00	0990_QC500_250401	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT) Email

esdat aecom-au

- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2509506**	Page	: 1 of 9
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	[redacted]	Address	: [redacted]
Telephone	: ----	Telephone	:
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 04-Apr-2025 13:30
Order number	: 60676801/1.05.11	Date Analysis Commenced	: 07-Apr-2025
C-O-C number	: ----	Issue Date	: 09-Apr-2025 13:45
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3		
No. of samples received	: 11		
No. of samples analysed	: 11		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_SW140_250401	0990_SW049_250401	0990_SW350_250401	0990_SW188_250401	0990_SW016_250401
			Sampling date / time	01-Apr-2025 00:00	01-Apr-2025 00:00	01-Apr-2025 00:00	01-Apr-2025 00:00	01-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2509506-001	ES2509506-002	ES2509506-003	ES2509506-004	ES2509506-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	**0.96**	<0.02	**0.04**	**0.08**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**0.02**	**0.89**	<0.02	**0.04**	**0.07**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.19**	**5.16**	<0.01	**0.32**	**0.44**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	**0.02**	**0.42**	<0.02	<0.02	**0.03**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.80**	**15.0**	**0.04**	**0.32**	**0.55**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	**0.11**	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	**0.4**	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	**0.65**	<0.02	**0.03**	**0.03**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**0.10**	**2.36**	<0.02	**0.06**	**0.10**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	**0.32**	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**0.04**	**0.75**	<0.01	**0.02**	**0.02**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	**0.05**	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	**0.02**	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	**0.04**	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_SW140_250401	0990_SW049_250401	0990_SW350_250401	0990_SW188_250401	0990_SW016_250401
			Sampling date / time	01-Apr-2025 00:00	01-Apr-2025 00:00	01-Apr-2025 00:00	01-Apr-2025 00:00	01-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2509506-001	ES2509506-002	ES2509506-003	ES2509506-004	ES2509506-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	**0.12**	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**1.31**	**27.7**	**0.04**	**0.83**	**1.35**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.99**	**20.2**	**0.04**	**0.64**	**0.99**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**1.25**	**25.6**	**0.04**	**0.79**	**1.22**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**98.2**	**99.3**	**98.6**	**95.8**	**101**
13C8-PFOA	----	0.02	%	**97.5**	**98.1**	**89.9**	**97.6**	**97.1**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_SW021_250401	0990_QC100_250401	0990_QC200_250401	0990_QC300_250401	0990_QC400_250401
			Sampling date / time	01-Apr-2025 00:00	01-Apr-2025 00:00	01-Apr-2025 00:00	01-Apr-2025 00:00	01-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2509506-006	ES2509506-007	ES2509506-008	ES2509506-009	ES2509506-010
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**0.02**	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	**0.02**	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.13**	**0.21**	**0.18**	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	**0.02**	**0.02**	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.15**	**0.86**	**0.79**	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	**0.02**	**0.02**	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**0.03**	**0.10**	**0.09**	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	**0.02**	**0.02**	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	**0.04**	**0.04**	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	**0.03**	**0.02**	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_SW021_250401	0990_QC100_250401	0990_QC200_250401	0990_QC300_250401	0990_QC400_250401
			Sampling date / time	01-Apr-2025 00:00	01-Apr-2025 00:00	01-Apr-2025 00:00	01-Apr-2025 00:00	01-Apr-2025 00:00
Compound	CAS Number	LOR	Unit	ES2509506-006	ES2509506-007	ES2509506-008	ES2509506-009	ES2509506-010
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	**0.10**	**0.11**	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.33**	**1.42**	**1.29**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.28**	**1.07**	**0.97**	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.33**	**1.35**	**1.25**	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**101**	**91.6**	**94.5**	**105**	**99.4**
13C8-PFOA	----	0.02	%	**97.4**	**98.1**	**93.5**	**94.4**	**92.7**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC500_250401	----	----	----	----
			Sampling date / time	01-Apr-2025 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2509506-011	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC500_250401	----	----	----	----
			Sampling date / time	01-Apr-2025 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2509506-011	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	101	----	----	----	----
13C8-PFOA	----	0.02	%	87.8	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2509506**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	[redacted]
Telephone	:	Telephone	
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 04-Apr-2025
Order number	: 60676801/1.05.11	Date Analysis Commenced	: 07-Apr-2025
C-O-C number	: ----	Issue Date	: 09-Apr-2025
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3		
No. of samples received	: 11		
No. of samples analysed	: 11		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6490175)									
ES2509770-029	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.05	0.05	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.18	0.17	6.6	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6490175)									
ES2509770-029	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6490175)									
ES2509770-029	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6490175) - continued									
ES2509770-029	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6490175)									
ES2509770-029	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6490175)									
ES2509770-029	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.26	0.25	3.9	0% - 20%

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6490175)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	87.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	95.1	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	91.8	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	103	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	97.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	104	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6490175)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	96.4	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	96.5	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	97.9	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	94.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	102	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	98.6	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	89.6	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.6	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	94.1	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	80.5	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	108	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6490175)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	99.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	111	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	99.1	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	95.5	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	100	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	89.3	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	93.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6490175)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6490175) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	108	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	117	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	94.1	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	126	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2509506**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 04-Apr-2025
Site	: ----	Issue Date	: 09-Apr-2025
Sampler	: [redacted]	No. of samples received	: 11
Order number	: 60676801/1.05.11	No. of samples analysed	: 11

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	5.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0990_SW140_250401,	0990_SW049_250401,	**01-Apr-2025**	**07-Apr-2025**	28-Sep-2025	✓	**09-Apr-2025**	28-Sep-2025	✓
0990_SW350_250401,	0990_SW188_250401,							
0990_SW016_250401,	0990_SW021_250401,							
0990_QC100_250401,	0990_QC200_250401,							
0990_QC300_250401,	0990_QC400_250401,							
0990_QC500_250401								
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0990_SW140_250401,	0990_SW049_250401,	**01-Apr-2025**	**07-Apr-2025**	28-Sep-2025	✓	**09-Apr-2025**	28-Sep-2025	✓
0990_SW350_250401,	0990_SW188_250401,							
0990_SW016_250401,	0990_SW021_250401,							
0990_QC100_250401,	0990_QC200_250401,							
0990_QC300_250401,	0990_QC400_250401,							
0990_QC500_250401								
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
0990_SW140_250401,	0990_SW049_250401,	**01-Apr-2025**	**07-Apr-2025**	28-Sep-2025	✓	**09-Apr-2025**	28-Sep-2025	✓
0990_SW350_250401,	0990_SW188_250401,							
0990_SW016_250401,	0990_SW021_250401,							
0990_QC100_250401,	0990_QC200_250401,							
0990_QC300_250401,	0990_QC400_250401,							
0990_QC500_250401								

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_SW140_250401, 0990_SW049_250401, 0990_SW350_250401, 0990_SW188_250401, 0990_SW016_250401, 0990_SW021_250401, 0990_QC100_250401, 0990_QC200_250401, 0990_QC300_250401, 0990_QC400_250401, 0990_QC500_250401	**01-Apr-2025**	**07-Apr-2025**	28-Sep-2025	✓	**09-Apr-2025**	28-Sep-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_SW140_250401, 0990_SW049_250401, 0990_SW350_250401, 0990_SW188_250401, 0990_SW016_250401, 0990_SW021_250401, 0990_QC100_250401, 0990_QC200_250401, 0990_QC300_250401, 0990_QC400_250401, 0990_QC500_250401	**01-Apr-2025**	**07-Apr-2025**	28-Sep-2025	✓	**09-Apr-2025**	28-Sep-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	20	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction (SPE) followed by negative mode LC-ESI-MS/MS using MRM and isotope dilution or internal standard quantitation. Isotope dilution standards (where commercially available) and surrogates are added to the sample container. The entire contents are transferred to a weak anion exchange (WAX) solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Data quality objectives for internal standard recoveries are based on US EPA method 1633.

Preparation Methods	Method	Matrix	Method Descriptions
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

Australian Government
Department of Industry, Science and Resources

National Measurement Institute

SAMPLE RECEIPT NOTIFICATION

CUSTOMER DETAILS

Attention: [redacted]

Customer: AECOM AUSTRALIA PTY LTD

Address: [redacted]

Email:

Telephone:

LABORATORY DETAILS

Lab: National Measurement Institute

Contact: Client Services

Address: [redacted]

Email:

Telephone:

SAMPLE DETAILS

NMI Job Name: AECO11/250327

Total No. of Samples: 2

LRNs	Estimated Report Date	Customer Sample ID	Lab Sample Description
N25/004720	3-APR-2025	0990_QC200_250320	WATER 20/03/2025
N25/004721	3-APR-2025	0990_QC200_250319	WATER 19/03/2025

SAMPLE RECEIVED CONDITION

Date samples received:	27-MAR-2025
Sample received in good order:	Yes
NMI Quotation no. provided:	NT_0990_PFASOMP_25
Client purchase order number:	60676801/10511
Temperature of samples:	Chilled
Comments:	
Mode of Delivery:	

Additional Terms and Conditions

Incomplete / unclear information about samples or required testing will delay the start of the analysis work.

If you require your Purchase Order (PO) number to be included on our invoice, please provide the number during sample submission and before the completion of work to avoid unnecessary delays and/or additional processing/handling fees.

Alterations to Client requirements requested after commencement of testing may incur charges.

The lodgement of an order or receipt of samples for NMI services referenced in this Sample Receipt Notification constitutes an acceptence of the current version of NMI Terms and Conditions or other applicable Terms referenced in the NMI Quotation. NMI Terms and Conditions are available on the web at https://www.industry.gov.au/client-services/testing-and-analysis-services/chemical-and-biological-analysis-services-terms-and-conditions

Australian Government

National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO09/250327 **Sample Matrix:** Liquid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		ug/L	ug/L	ug/L	ug/L	%	%	%
PFBA (375-22-4)	NR70	0.05	<0.05	NA	NA	NA	138	NA
PFPeA (2706-90-3)	NR70	0.02	<0.02	NA	NA	NA	115	NA
PFHxA (307-24-4)	NR70	0.01	<0.01	NA	NA	NA	110	NA
PFHpA (375-85-9)	NR70	0.01	<0.01	NA	NA	NA	108	NA
PFOA (335-67-1)	NR70	0.01	<0.01	NA	NA	NA	109	NA
PFNA (375-95-1)	NR70	0.01	<0.01	NA	NA	NA	112	NA
PFDA (335-76-2)	NR70	0.01	<0.01	NA	NA	NA	105	NA
PFUdA (2058-94-8)	NR70	0.01	<0.01	NA	NA	NA	110	NA
PFDoA (307-55-1)	NR70	0.01	<0.01	NA	NA	NA	117	NA
PFTrDA (72629-94-8)	NR70	0.02	<0.02	NA	NA	NA	105	NA
PFTeDA (376-06-7)	NR70	0.02	<0.02	NA	NA	NA	123	NA
PFHxDA (67905-19-5)	NR70	0.02	<0.02	NA	NA	NA	111	NA
PFODA (16517-11-6)	NR70	0.05	<0.05	NA	NA	NA	92	NA
FOUEA (70887-84-2)	NR70	0.01	<0.01	NA	NA	NA	113	NA
PFBS (375-73-5)	NR70	0.01	<0.01	NA	NA	NA	113	NA
PFPeS (2706-91-4)	NR70	0.01	<0.01	NA	NA	NA	108	NA
PFHxS (355-46-4)	NR70	0.01	<0.01	NA	NA	NA	115	NA
PFHpS (375-92-8)	NR70	0.01	<0.01	NA	NA	NA	118	NA
PFOS (1763-23-1)	NR70	0.02	<0.02	NA	NA	NA	113	NA
PFNS (68259-12-1)	NR70	0.01	<0.01	NA	NA	NA	115	NA
PFDS (335-77-3)	NR70	0.01	<0.01	NA	NA	NA	109	NA
PFOSA (754-91-6)	NR70	0.01	<0.01	NA	NA	NA	108	NA
N-MeFOSA (31506-32-8)	NR70	0.02	<0.02	NA	NA	NA	122	NA
N-EtFOSA (4151-50-2)	NR70	0.02	<0.02	NA	NA	NA	113	NA
N-MeFOSAA (2355-31-9)	NR70	0.01	<0.01	NA	NA	NA	113	NA
N-EtFOSAA(2991-50-6)	NR70	0.01	<0.01	NA	NA	NA	112	NA
N-MeFOSE (24448-09-7)	NR70	0.05	<0.05	NA	NA	NA	102	NA
N-EtFOSE (1691-99-2)	NR70	0.05	<0.05	NA	NA	NA	125	NA
4:2 FTS (757124-72-4)	NR70	0.01	<0.01	NA	NA	NA	106	NA
6:2 FTS (27619-97-2)	NR70	0.01	<0.01	NA	NA	NA	123	NA
8:2 FTS (39108-34-4)	NR70	0.01	<0.01	NA	NA	NA	117	NA
10:2 FTS (120226-60-0)	NR70	0.01	<0.01	NA	NA	NA	117	NA
8:2 diPAP (678-41-1)	NR70	0.02	<0.02	NA	NA	NA	129	NA

Results expressed in percentage (%) or ug/L wherever appropriate.
Acceptable Spike recovery is 50-150%.
Maximum acceptable RPDs on spikes and duplicates is 40%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference.

Signed: [redacted]

Organics Manager, NMI-North Ryde

Date: **3/04/2025**

Australian Government
Department of Industry, Science and Resources

National Measurement Institute

NATA

REPORT OF ANALYSIS

Report No. RN1460699

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO11/250327
	[redacted]et	**Quote No.**	: QT-02294
		Order No.	: 60676801/10511
		Date Received	: 27-MAR-2025
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: NT_0990_PFASOMP_25		
For Follow up enquiries	: [redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N25/004720	0990_QC200_250320	WATER 20/03/2025
N25/004721	0990_QC200_250319	WATER 19/03/2025

Lab Reg No.		N25/004720	N25/004721			
Date Sampled		20-MAR-2025	19-MAR-2025			
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	ug/L	<0.05	<0.05			NR70
PFPeA (2706-90-3)	ug/L	<0.02	<0.02			NR70
PFHxA (307-24-4)	ug/L	0.068	<0.01			NR70
PFHpA (375-85-9)	ug/L	<0.01	<0.01			NR70
PFOA (335-67-1)	ug/L	<0.01	<0.01			NR70
PFNA (375-95-1)	ug/L	<0.01	<0.01			NR70
PFDA (335-76-2)	ug/L	<0.01	<0.01			NR70
PFUdA (2058-94-8)	ug/L	<0.01	<0.01			NR70
PFDoA (307-55-1)	ug/L	<0.01	<0.01			NR70
PFTrDA (72629-94-8)	ug/L	<0.02	<0.02			NR70
PFTeDA (376-06-7)	ug/L	<0.02	<0.02			NR70
PFHxDA (67905-19-5)	ug/L	<0.02	<0.02			NR70
PFODA (16517-11-6)	ug/L	<0.05	<0.05			NR70
FOUEA (70887-84-2)	ug/L	<0.01	<0.01			NR70
PFDS (335-77-3)	ug/L	<0.01	<0.01			NR70
PFPeS (2706-91-4)	ug/L	0.033	<0.01			NR70
PFHxS (355-46-4)	ug/L	0.10	<0.01			NR70
PFHpS (375-92-8)	ug/L	<0.01	<0.01			NR70
PFOS (1763-23-1)	ug/L	0.054	<0.02			NR70
PFNS (68259-12-1)	ug/L	<0.01	<0.01			NR70
PFBS (375-73-5)	ug/L	0.034	<0.01			NR70
PFOSA (754-91-6)	ug/L	<0.01	<0.01			NR70
N-MeFOSA (31506-32-8)	ug/L	<0.02	<0.02			NR70
N-EtFOSA (4151-50-2)	ug/L	<0.02	<0.02			NR70
N-MeFOSAA (2355-31-9)	ug/L	<0.01	<0.01			NR70
N-EtFOSAA(2991-50-6)	ug/L	<0.01	<0.01			NR70
N-MeFOSE (24448-09-7)	ug/L	<0.05	<0.05			NR70
N-EtFOSE (1691-99-2)	ug/L	<0.05	<0.05			NR70
4:2 FTS (757124-72-4)	ug/L	<0.01	<0.01			NR70

REPORT OF ANALYSIS

Report No. RN1460699

Lab Reg No.		N25/004720	N25/004721			
Date Sampled		20-MAR-2025	19-MAR-2025			
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
6:2 FTS (27619-97-2)	ug/L	<0.01	<0.01			NR70
8:2 FTS (39108-34-4)	ug/L	<0.01	<0.01			NR70
10:2 FTS (120226-60-0)	ug/L	<0.01	<0.01			NR70
8:2 diPAP (678-41-1)	ug/L	<0.02	<0.02			NR70
PFBA (Surrogate Recovery)	%	99	100			NR70
PFPeA (Surrogate Recovery)	%	99	111			NR70
PFHxA (Surrogate Recovery)	%	100	93			NR70
PFHpA (Surrogate Recovery)	%	100	94			NR70
PFOA (Surrogate Recovery)	%	97	95			NR70
PFNA (Surrogate Recovery)	%	95	94			NR70
PFDA (Surrogate Recovery)	%	99	94			NR70
PFUdA (Surrogate Recovery)	%	89	90			NR70
PFDoA (Surrogate Recovery)	%	85	85			NR70
PFTeDA (Surrogate Recovery)	%	74	70			NR70
PFHxDA (Surrogate Recovery)	%	85	83			NR70
FOUEA (Surrogate Recovery)	%	91	83			NR70
PFBS (Surrogate Recovery)	%	103	96			NR70
PFHxS (Surrogate Recovery)	%	94	88			NR70
PFOS (Surrogate Recovery)	%	104	101			NR70
PFOSA (Surrogate Recovery)	%	70	77			NR70
N-MeFOSA (Surrogate Recovery)	%	51	49			NR70
N-EtFOSA (Surrogate Recovery)	%	50	48			NR70
N-MeFOSAA (Surrogate Recovery)	%	84	76			NR70
N-EtFOSAA (Surrogate Recovery)	%	88	81			NR70
N-MeFOSE (Surrogate Recovery)	%	60	57			NR70
N-EtFOSE (Surrogate Recovery)	%	56	54			NR70
4:2 FTS (Surrogate Recovery)	%	116	89			NR70
6:2 FTS (Surrogate Recovery)	%	80	77			NR70
8:2 FTS (Surrogate Recovery)	%	70	75			NR70
8:2 diPAP (Surrogate Recovery)	%	68	74			NR70
Dates						
Date extracted		2-APR-2025	2-APR-2025			
Date analysed		2-APR-2025	2-APR-2025			

N25/004720
to
N25/004721

PFOS and PFHxS are quantified using a combined branched and linear standard,

REPORT OF ANALYSIS

linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.

Selected PFAS surrogate recoveries are biased due to matrix effects.ô
Surrogate recoveries low for selected analytes - PFAS LORs not raised since S/N >10.

[redacted]
[redacted], Analyst
Organics - NSW
Accreditation No. 198

07-APR-2025

NATA
WORLD RECOGNISED
ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

Measurement Uncertainty is available upon request.

Note: Sampling date(s) have been provided by the client.
The testing was undertaken at: [redacted]

Australian Government
National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO09/250327 **Sample Matrix:** Liquid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		ug/L	ug/L	ug/L	ug/L	%	%	%
PFBA (375-22-4)	NR70	0.05	<0.05	NA	NA	NA	138	NA
PFPeA (2706-90-3)	NR70	0.02	<0.02	NA	NA	NA	115	NA
PFHxA (307-24-4)	NR70	0.01	<0.01	NA	NA	NA	110	NA
PFHpA (375-85-9)	NR70	0.01	<0.01	NA	NA	NA	108	NA
PFOA (335-67-1)	NR70	0.01	<0.01	NA	NA	NA	109	NA
PFNA (375-95-1)	NR70	0.01	<0.01	NA	NA	NA	112	NA
PFDA (335-76-2)	NR70	0.01	<0.01	NA	NA	NA	105	NA
PFUdA (2058-94-8)	NR70	0.01	<0.01	NA	NA	NA	110	NA
PFDoA (307-55-1)	NR70	0.01	<0.01	NA	NA	NA	117	NA
PFTrDA (72629-94-8)	NR70	0.02	<0.02	NA	NA	NA	105	NA
PFTeDA (376-06-7)	NR70	0.02	<0.02	NA	NA	NA	123	NA
PFHxDA (67905-19-5)	NR70	0.02	<0.02	NA	NA	NA	111	NA
PFODA (16517-11-6)	NR70	0.05	<0.05	NA	NA	NA	92	NA
FOUEA (70887-84-2)	NR70	0.01	<0.01	NA	NA	NA	113	NA
PFBS (375-73-5)	NR70	0.01	<0.01	NA	NA	NA	113	NA
PFPeS (2706-91-4)	NR70	0.01	<0.01	NA	NA	NA	108	NA
PFHxS (355-46-4)	NR70	0.01	<0.01	NA	NA	NA	115	NA
PFHpS (375-92-8)	NR70	0.01	<0.01	NA	NA	NA	118	NA
PFOS (1763-23-1)	NR70	0.02	<0.02	NA	NA	NA	113	NA
PFNS (68259-12-1)	NR70	0.01	<0.01	NA	NA	NA	115	NA
PFDS (335-77-3)	NR70	0.01	<0.01	NA	NA	NA	109	NA
PFOSA (754-91-6)	NR70	0.01	<0.01	NA	NA	NA	108	NA
N-MeFOSA (31506-32-8)	NR70	0.02	<0.02	NA	NA	NA	122	NA
N-EtFOSA (4151-50-2)	NR70	0.02	<0.02	NA	NA	NA	113	NA
N-MeFOSAA (2355-31-9)	NR70	0.01	<0.01	NA	NA	NA	113	NA
N-EtFOSAA(2991-50-6)	NR70	0.01	<0.01	NA	NA	NA	112	NA
N-MeFOSE (24448-09-7)	NR70	0.05	<0.05	NA	NA	NA	102	NA
N-EtFOSE (1691-99-2)	NR70	0.05	<0.05	NA	NA	NA	125	NA
4:2 FTS (757124-72-4)	NR70	0.01	<0.01	NA	NA	NA	106	NA
6:2 FTS (27619-97-2)	NR70	0.01	<0.01	NA	NA	NA	123	NA
8:2 FTS (39108-34-4)	NR70	0.01	<0.01	NA	NA	NA	117	NA
10:2 FTS (120226-60-0)	NR70	0.01	<0.01	NA	NA	NA	117	NA
8:2 diPAP (678-41-1)	NR70	0.02	<0.02	NA	NA	NA	129	NA

Results expressed in percentage (%) or ug/L wherever appropriate.
Acceptable Spike recovery is 50-150%.
Maximum acceptable RPDs on spikes and duplicates is 40%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference.

Signed: [redacted]

Organics Manager, NMI-North Ryde

Date: **3/04/2025**

Australian Government
Department of Industry, Science and Resources

National Measurement Institute

NATA

REPORT OF ANALYSIS

Report No. RN1460699

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO11/250327
	[redacted]	**Quote No.**	: QT-02294
		Order No.	: 60676801/10511
		Date Received	: 27-MAR-2025
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: NT_0990_PFASOMP_25		
For Follow up enquiries	: [redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N25/004720	0990_QC200_250320	WATER 20/03/2025
N25/004721	0990_QC200_250319	WATER 19/03/2025

Lab Reg No.		N25/004720	N25/004721			
Date Sampled		20-MAR-2025	19-MAR-2025			
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	ug/L	<0.05	<0.05			NR70
PFPeA (2706-90-3)	ug/L	<0.02	<0.02			NR70
PFHxA (307-24-4)	ug/L	0.068	<0.01			NR70
PFHpA (375-85-9)	ug/L	<0.01	<0.01			NR70
PFOA (335-67-1)	ug/L	<0.01	<0.01			NR70
PFNA (375-95-1)	ug/L	<0.01	<0.01			NR70
PFDA (335-76-2)	ug/L	<0.01	<0.01			NR70
PFUdA (2058-94-8)	ug/L	<0.01	<0.01			NR70
PFDoA (307-55-1)	ug/L	<0.01	<0.01			NR70
PFTrDA (72629-94-8)	ug/L	<0.02	<0.02			NR70
PFTeDA (376-06-7)	ug/L	<0.02	<0.02			NR70
PFHxDA (67905-19-5)	ug/L	<0.02	<0.02			NR70
PFODA (16517-11-6)	ug/L	<0.05	<0.05			NR70
FOUEA (70887-84-2)	ug/L	<0.01	<0.01			NR70
PFDS (335-77-3)	ug/L	<0.01	<0.01			NR70
PFPeS (2706-91-4)	ug/L	0.033	<0.01			NR70
PFHxS (355-46-4)	ug/L	0.10	<0.01			NR70
PFHpS (375-92-8)	ug/L	<0.01	<0.01			NR70
PFOS (1763-23-1)	ug/L	0.054	<0.02			NR70
PFNS (68259-12-1)	ug/L	<0.01	<0.01			NR70
PFBS (375-73-5)	ug/L	0.034	<0.01			NR70
PFOSA (754-91-6)	ug/L	<0.01	<0.01			NR70
N-MeFOSA (31506-32-8)	ug/L	<0.02	<0.02			NR70
N-EtFOSA (4151-50-2)	ug/L	<0.02	<0.02			NR70
N-MeFOSAA (2355-31-9)	ug/L	<0.01	<0.01			NR70
N-EtFOSAA(2991-50-6)	ug/L	<0.01	<0.01			NR70
N-MeFOSE (24448-09-7)	ug/L	<0.05	<0.05			NR70
N-EtFOSE (1691-99-2)	ug/L	<0.05	<0.05			NR70
4:2 FTS (757124-72-4)	ug/L	<0.01	<0.01			NR70

REPORT OF ANALYSIS

Report No. RN1460699

Lab Reg No.		N25/004720	N25/004721			
Date Sampled		20-MAR-2025	19-MAR-2025			
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
6:2 FTS (27619-97-2)	ug/L	<0.01	<0.01			NR70
8:2 FTS (39108-34-4)	ug/L	<0.01	<0.01			NR70
10:2 FTS (120226-60-0)	ug/L	<0.01	<0.01			NR70
8:2 diPAP (678-41-1)	ug/L	<0.02	<0.02			NR70
PFBA (Surrogate Recovery)	%	99	100			NR70
PFPeA (Surrogate Recovery)	%	99	111			NR70
PFHxA (Surrogate Recovery)	%	100	93			NR70
PFHpA (Surrogate Recovery)	%	100	94			NR70
PFOA (Surrogate Recovery)	%	97	95			NR70
PFNA (Surrogate Recovery)	%	95	94			NR70
PFDA (Surrogate Recovery)	%	99	94			NR70
PFUdA (Surrogate Recovery)	%	89	90			NR70
PFDoA (Surrogate Recovery)	%	85	85			NR70
PFTeDA (Surrogate Recovery)	%	74	70			NR70
PFHxDA (Surrogate Recovery)	%	85	83			NR70
FOUEA (Surrogate Recovery)	%	91	83			NR70
PFBS (Surrogate Recovery)	%	103	96			NR70
PFHxS (Surrogate Recovery)	%	94	88			NR70
PFOS (Surrogate Recovery)	%	104	101			NR70
PFOSA (Surrogate Recovery)	%	70	77			NR70
N-MeFOSA (Surrogate Recovery)	%	51	49			NR70
N-EtFOSA (Surrogate Recovery)	%	50	48			NR70
N-MeFOSAA (Surrogate Recovery)	%	84	76			NR70
N-EtFOSAA (Surrogate Recovery)	%	88	81			NR70
N-MeFOSE (Surrogate Recovery)	%	60	57			NR70
N-EtFOSE (Surrogate Recovery)	%	56	54			NR70
4:2 FTS (Surrogate Recovery)	%	116	89			NR70
6:2 FTS (Surrogate Recovery)	%	80	77			NR70
8:2 FTS (Surrogate Recovery)	%	70	75			NR70
8:2 diPAP (Surrogate Recovery)	%	68	74			NR70
Dates						
Date extracted		2-APR-2025	2-APR-2025			
Date analysed		2-APR-2025	2-APR-2025			

N25/004720
to
N25/004721

PFOS and PFHxS are quantified using a combined branched and linear standard,

REPORT OF ANALYSIS

linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.

Selected PFAS surrogate recoveries are biased due to matrix effects.ô
Surrogate recoveries low for selected analytes - PFAS LORs not raised since S/N >10.

[redacted]
[redacted], Analyst
Organics - NSW
Accreditation No. 198

07-APR-2025

NATA
WORLD RECOGNISED
ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

Measurement Uncertainty is available upon request.

Note: Sampling date(s) have been provided by the client.
The testing was undertaken at: [redacted]

Australian Government

National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO09/250327 **Sample Matrix:** Liquid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		ug/L	ug/L	ug/L	ug/L	%	%	%
PFBA (375-22-4)	NR70	0.05	<0.05	NA	NA	NA	138	NA
PFPeA (2706-90-3)	NR70	0.02	<0.02	NA	NA	NA	115	NA
PFHxA (307-24-4)	NR70	0.01	<0.01	NA	NA	NA	110	NA
PFHpA (375-85-9)	NR70	0.01	<0.01	NA	NA	NA	108	NA
PFOA (335-67-1)	NR70	0.01	<0.01	NA	NA	NA	109	NA
PFNA (375-95-1)	NR70	0.01	<0.01	NA	NA	NA	112	NA
PFDA (335-76-2)	NR70	0.01	<0.01	NA	NA	NA	105	NA
PFUdA (2058-94-8)	NR70	0.01	<0.01	NA	NA	NA	110	NA
PFDoA (307-55-1)	NR70	0.01	<0.01	NA	NA	NA	117	NA
PFTrDA (72629-94-8)	NR70	0.02	<0.02	NA	NA	NA	105	NA
PFTeDA (376-06-7)	NR70	0.02	<0.02	NA	NA	NA	123	NA
PFHxDA (67905-19-5)	NR70	0.02	<0.02	NA	NA	NA	111	NA
PFODA (16517-11-6)	NR70	0.05	<0.05	NA	NA	NA	92	NA
FOUEA (70887-84-2)	NR70	0.01	<0.01	NA	NA	NA	113	NA
PFBS (375-73-5)	NR70	0.01	<0.01	NA	NA	NA	113	NA
PFPeS (2706-91-4)	NR70	0.01	<0.01	NA	NA	NA	108	NA
PFHxS (355-46-4)	NR70	0.01	<0.01	NA	NA	NA	115	NA
PFHpS (375-92-8)	NR70	0.01	<0.01	NA	NA	NA	118	NA
PFOS (1763-23-1)	NR70	0.02	<0.02	NA	NA	NA	113	NA
PFNS (68259-12-1)	NR70	0.01	<0.01	NA	NA	NA	115	NA
PFDS (335-77-3)	NR70	0.01	<0.01	NA	NA	NA	109	NA
PFOSA (754-91-6)	NR70	0.01	<0.01	NA	NA	NA	108	NA
N-MeFOSA (31506-32-8)	NR70	0.02	<0.02	NA	NA	NA	122	NA
N-EtFOSA (4151-50-2)	NR70	0.02	<0.02	NA	NA	NA	113	NA
N-MeFOSAA (2355-31-9)	NR70	0.01	<0.01	NA	NA	NA	113	NA
N-EtFOSAA(2991-50-6)	NR70	0.01	<0.01	NA	NA	NA	112	NA
N-MeFOSE (24448-09-7)	NR70	0.05	<0.05	NA	NA	NA	102	NA
N-EtFOSE (1691-99-2)	NR70	0.05	<0.05	NA	NA	NA	125	NA
4:2 FTS (757124-72-4)	NR70	0.01	<0.01	NA	NA	NA	106	NA
6:2 FTS (27619-97-2)	NR70	0.01	<0.01	NA	NA	NA	123	NA
8:2 FTS (39108-34-4)	NR70	0.01	<0.01	NA	NA	NA	117	NA
10:2 FTS (120226-60-0)	NR70	0.01	<0.01	NA	NA	NA	117	NA
8:2 diPAP (678-41-1)	NR70	0.02	<0.02	NA	NA	NA	129	NA

Results expressed in percentage (%) or ug/L wherever appropriate.
Acceptable Spike recovery is 50-150%.
Maximum acceptable RPDs on spikes and duplicates is 40%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference.

Signed: [redacted]

Organics Manager, NMI-North Ryde

Date: **3/04/2025**

Australian Government
Department of Industry, Science and Resources

National Measurement Institute

NATA

REPORT OF ANALYSIS

Report No. RN1460699

Client	: AECOM AUSTRALIA PTY LTD	**Job No.**	: AECO11/250327
	[redacted]	**Quote No.**	: QT-02294
		Order No.	: 60676801/10511
		Date Received	: 27-MAR-2025
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: NT_0990_PFASOMP_25		
For Follow up enquiries	: [redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N25/004720	0990_QC200_250320	WATER 20/03/2025
N25/004721	0990_QC200_250319	WATER 19/03/2025

Lab Reg No.		N25/004720	N25/004721			
Date Sampled		20-MAR-2025	19-MAR-2025			
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	ug/L	<0.05	<0.05			NR70
PFPeA (2706-90-3)	ug/L	<0.02	<0.02			NR70
PFHxA (307-24-4)	ug/L	0.068	<0.01			NR70
PFHpA (375-85-9)	ug/L	<0.01	<0.01			NR70
PFOA (335-67-1)	ug/L	<0.01	<0.01			NR70
PFNA (375-95-1)	ug/L	<0.01	<0.01			NR70
PFDA (335-76-2)	ug/L	<0.01	<0.01			NR70
PFUdA (2058-94-8)	ug/L	<0.01	<0.01			NR70
PFDoA (307-55-1)	ug/L	<0.01	<0.01			NR70
PFTrDA (72629-94-8)	ug/L	<0.02	<0.02			NR70
PFTeDA (376-06-7)	ug/L	<0.02	<0.02			NR70
PFHxDA (67905-19-5)	ug/L	<0.02	<0.02			NR70
PFODA (16517-11-6)	ug/L	<0.05	<0.05			NR70
FOUEA (70887-84-2)	ug/L	<0.01	<0.01			NR70
PFDS (335-77-3)	ug/L	<0.01	<0.01			NR70
PFPeS (2706-91-4)	ug/L	0.033	<0.01			NR70
PFHxS (355-46-4)	ug/L	0.10	<0.01			NR70
PFHpS (375-92-8)	ug/L	<0.01	<0.01			NR70
PFOS (1763-23-1)	ug/L	0.054	<0.02			NR70
PFNS (68259-12-1)	ug/L	<0.01	<0.01			NR70
PFBS (375-73-5)	ug/L	0.034	<0.01			NR70
PFOSA (754-91-6)	ug/L	<0.01	<0.01			NR70
N-MeFOSA (31506-32-8)	ug/L	<0.02	<0.02			NR70
N-EtFOSA (4151-50-2)	ug/L	<0.02	<0.02			NR70
N-MeFOSAA (2355-31-9)	ug/L	<0.01	<0.01			NR70
N-EtFOSAA(2991-50-6)	ug/L	<0.01	<0.01			NR70
N-MeFOSE (24448-09-7)	ug/L	<0.05	<0.05			NR70
N-EtFOSE (1691-99-2)	ug/L	<0.05	<0.05			NR70
4:2 FTS (757124-72-4)	ug/L	<0.01	<0.01			NR70

REPORT OF ANALYSIS

Report No. RN1460699

Lab Reg No.		N25/004720	N25/004721			
Date Sampled		20-MAR-2025	19-MAR-2025			
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
6:2 FTS (27619-97-2)	ug/L	<0.01	<0.01			NR70
8:2 FTS (39108-34-4)	ug/L	<0.01	<0.01			NR70
10:2 FTS (120226-60-0)	ug/L	<0.01	<0.01			NR70
8:2 diPAP (678-41-1)	ug/L	<0.02	<0.02			NR70
PFBA (Surrogate Recovery)	%	99	100			NR70
PFPeA (Surrogate Recovery)	%	99	111			NR70
PFHxA (Surrogate Recovery)	%	100	93			NR70
PFHpA (Surrogate Recovery)	%	100	94			NR70
PFOA (Surrogate Recovery)	%	97	95			NR70
PFNA (Surrogate Recovery)	%	95	94			NR70
PFDA (Surrogate Recovery)	%	99	94			NR70
PFUdA (Surrogate Recovery)	%	89	90			NR70
PFDoA (Surrogate Recovery)	%	85	85			NR70
PFTeDA (Surrogate Recovery)	%	74	70			NR70
PFHxDA (Surrogate Recovery)	%	85	83			NR70
FOUEA (Surrogate Recovery)	%	91	83			NR70
PFBS (Surrogate Recovery)	%	103	96			NR70
PFHxS (Surrogate Recovery)	%	94	88			NR70
PFOS (Surrogate Recovery)	%	104	101			NR70
PFOSA (Surrogate Recovery)	%	70	77			NR70
N-MeFOSA (Surrogate Recovery)	%	51	49			NR70
N-EtFOSA (Surrogate Recovery)	%	50	48			NR70
N-MeFOSAA (Surrogate Recovery)	%	84	76			NR70
N-EtFOSAA (Surrogate Recovery)	%	88	81			NR70
N-MeFOSE (Surrogate Recovery)	%	60	57			NR70
N-EtFOSE (Surrogate Recovery)	%	56	54			NR70
4:2 FTS (Surrogate Recovery)	%	116	89			NR70
6:2 FTS (Surrogate Recovery)	%	80	77			NR70
8:2 FTS (Surrogate Recovery)	%	70	75			NR70
8:2 diPAP (Surrogate Recovery)	%	68	74			NR70
Dates						
Date extracted		2-APR-2025	2-APR-2025			
Date analysed		2-APR-2025	2-APR-2025			

N25/004720
to
N25/004721

PFOS and PFHxS are quantified using a combined branched and linear standard,

REPORT OF ANALYSIS

linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.

Selected PFAS surrogate recoveries are biased due to matrix effects.ô
Surrogate recoveries low for selected analytes - PFAS LORs not raised since S/N >10.

[redacted] Analyst
Organics - NSW
Accreditation No. 198

07-APR-2025

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

Measurement Uncertainty is available upon request.

Note: Sampling date(s) have been provided by the client.
The testing was undertaken at: [redacted]

Australian Government

National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO09/250414 **Sample Matrix:** Liquid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		ug/L	ug/L	ug/L	ug/L	%	%	%
PFBA (375-22-4)	NR70	0.05	<0.05	NA	NA	NA	129	NA
PFPeA (2706-90-3)	NR70	0.02	<0.02	NA	NA	NA	121	NA
PFHxA (307-24-4)	NR70	0.01	<0.01	NA	NA	NA	113	NA
PFHpA (375-85-9)	NR70	0.01	<0.01	NA	NA	NA	116	NA
PFOA (335-67-1)	NR70	0.01	<0.01	NA	NA	NA	116	NA
PFNA (375-95-1)	NR70	0.01	<0.01	NA	NA	NA	118	NA
PFDA (335-76-2)	NR70	0.01	<0.01	NA	NA	NA	117	NA
PFUdA (2058-94-8)	NR70	0.01	<0.01	NA	NA	NA	114	NA
PFDoA (307-55-1)	NR70	0.01	<0.01	NA	NA	NA	116	NA
PFTrDA (72629-94-8)	NR70	0.02	<0.02	NA	NA	NA	110	NA
PFTeDA (376-06-7)	NR70	0.02	<0.02	NA	NA	NA	126	NA
PFHxDA (67905-19-5)	NR70	0.02	<0.02	NA	NA	NA	116	NA
PFODA (16517-11-6)	NR70	0.05	<0.05	NA	NA	NA	71	NA
FOUEA (70887-84-2)	NR70	0.01	<0.01	NA	NA	NA	108	NA
PFBS (375-73-5)	NR70	0.01	<0.01	NA	NA	NA	115	NA
PFPeS (2706-91-4)	NR70	0.01	<0.01	NA	NA	NA	110	NA
PFHxS (355-46-4)	NR70	0.01	<0.01	NA	NA	NA	124	NA
PFHpS (375-92-8)	NR70	0.01	<0.01	NA	NA	NA	139	NA
PFOS (1763-23-1)	NR70	0.02	<0.02	NA	NA	NA	123	NA
PFNS (68259-12-1)	NR70	0.01	<0.01	NA	NA	NA	121	NA
PFDS (335-77-3)	NR70	0.01	<0.01	NA	NA	NA	122	NA
PFOSA (754-91-6)	NR70	0.01	<0.01	NA	NA	NA	119	NA
N-MeFOSA (31506-32-8)	NR70	0.02	<0.02	NA	NA	NA	118	NA
N-EtFOSA (4151-50-2)	NR70	0.02	<0.02	NA	NA	NA	114	NA
N-MeFOSAA (2355-31-9)	NR70	0.01	<0.01	NA	NA	NA	120	NA
N-EtFOSAA(2991-50-6)	NR70	0.01	<0.01	NA	NA	NA	111	NA
N-MeFOSE (24448-09-7)	NR70	0.05	<0.05	NA	NA	NA	103	NA
N-EtFOSE (1691-99-2)	NR70	0.05	<0.05	NA	NA	NA	130	NA
4:2 FTS (757124-72-4)	NR70	0.01	<0.01	NA	NA	NA	123	NA
6:2 FTS (27619-97-2)	NR70	0.01	<0.01	NA	NA	NA	120	NA
8:2 FTS (39108-34-4)	NR70	0.01	<0.01	NA	NA	NA	120	NA
10:2 FTS (120226-60-0)	NR70	0.01	<0.01	NA	NA	NA	112	NA
8:2 diPAP (678-41-1)	NR70	0.02	<0.02	NA	NA	NA	107	NA

Results expressed in percentage (%) or ug/L wherever appropriate.
Acceptable Spike recovery is 50-150%.
Maximum acceptable RPDs on spikes and duplicates is 40%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference.

Signed: [redacted]

Organics Manager, NMI-North Ryde

Date: **23/04/2025**

Australian Government
Department of Industry, Science and Resources

National Measurement Institute

NATA

REPORT OF ANALYSIS

Report No. RN1462425

Client	: AECOM SERVICES PTY LTD	**Job No.**	: AECO09/250414
	[redacted]	**Quote No.**	: QT-02294
		Order No.	: 60676801/10511
		Date Received	: 14-APR-2025
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	:		
For Follow up enquiries	: [redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N25/005950	0990_QC200_250401	WATER 1/04/2025

Lab Reg No.		**N25/005950**				
Date Sampled		**02-APR-2025**				
Sample Reference	**Units**	**0990_QC200_2**				**Method**
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	ug/L	<0.05				NR70
PFPeA (2706-90-3)	ug/L	0.028				NR70
PFHxA (307-24-4)	ug/L	0.096				NR70
PFHpA (375-85-9)	ug/L	0.023				NR70
PFOA (335-67-1)	ug/L	0.038				NR70
PFNA (375-95-1)	ug/L	0.012				NR70
PFDA (335-76-2)	ug/L	0.015				NR70
PFUdA (2058-94-8)	ug/L	0.023				NR70
PFDoA (307-55-1)	ug/L	0.029				NR70
PFTrDA (72629-94-8)	ug/L	<0.02				NR70
PFTeDA (376-06-7)	ug/L	<0.02				NR70
PFHxDA (67905-19-5)	ug/L	<0.02				NR70
PFODA (16517-11-6)	ug/L	<0.05				NR70
FOUEA (70887-84-2)	ug/L	<0.01				NR70
PFDS (335-77-3)	ug/L	<0.01				NR70
PFPeS (2706-91-4)	ug/L	0.028				NR70
PFHxS (355-46-4)	ug/L	0.20				NR70
PFHpS (375-92-8)	ug/L	0.019				NR70
PFOS (1763-23-1)	ug/L	0.93				NR70
PFNS (68259-12-1)	ug/L	<0.01				NR70
PFBS (375-73-5)	ug/L	0.021				NR70
PFOSA (754-91-6)	ug/L	<0.01				NR70
N-MeFOSA (31506-32-8)	ug/L	<0.02				NR70
N-EtFOSA (4151-50-2)	ug/L	<0.02				NR70
N-MeFOSAA (2355-31-9)	ug/L	<0.01				NR70
N-EtFOSAA(2991-50-6)	ug/L	<0.01				NR70
N-MeFOSE (24448-09-7)	ug/L	<0.05				NR70
N-EtFOSE (1691-99-2)	ug/L	<0.05				NR70
4:2 FTS (757124-72-4)	ug/L	<0.01				NR70
6:2 FTS (27619-97-2)	ug/L	<0.01				NR70

REPORT OF ANALYSIS

Report No. RN1462425

Lab Reg No.		N25/005950				
Date Sampled		02-APR-2025				
Sample Reference	Units	0990_QC200_2				Method
PFAS (per-and poly-fluoroalkyl substances)						
8:2 FTS (39108-34-4)	ug/L	0.16				NR70
10:2 FTS (120226-60-0)	ug/L	<0.01				NR70
8:2 diPAP (678-41-1)	ug/L	<0.05				NR70
PFBA (Surrogate Recovery)	%	55				NR70
PFPeA (Surrogate Recovery)	%	56				NR70
PFHxA (Surrogate Recovery)	%	52				NR70
PFHpA (Surrogate Recovery)	%	56				NR70
PFOA (Surrogate Recovery)	%	56				NR70
PFNA (Surrogate Recovery)	%	54				NR70
PFDA (Surrogate Recovery)	%	48				NR70
PFUdA (Surrogate Recovery)	%	44				NR70
PFDoA (Surrogate Recovery)	%	36				NR70
PFTeDA (Surrogate Recovery)	%	34				NR70
PFHxDA (Surrogate Recovery)	%	25				NR70
FOUEA (Surrogate Recovery)	%	39				NR70
PFBS (Surrogate Recovery)	%	55				NR70
PFHxS (Surrogate Recovery)	%	56				NR70
PFOS (Surrogate Recovery)	%	50				NR70
PFOSA (Surrogate Recovery)	%	31				NR70
N-MeFOSA (Surrogate Recovery)	%	23				NR70
N-EtFOSA (Surrogate Recovery)	%	22				NR70
N-MeFOSAA (Surrogate Recovery)	%	32				NR70
N-EtFOSAA (Surrogate Recovery)	%	33				NR70
N-MeFOSE (Surrogate Recovery)	%	27				NR70
N-EtFOSE (Surrogate Recovery)	%	25				NR70
4:2 FTS (Surrogate Recovery)	%	57				NR70
6:2 FTS (Surrogate Recovery)	%	43				NR70
8:2 FTS (Surrogate Recovery)	%	44				NR70
8:2 diPAP (Surrogate Recovery)	%	15				NR70
Dates						
Date extracted		23-APR-2025				
Date analysed		23-APR-2025				

N25/005950
PFOS and PFHxS are quantified using a combined branched and linear standard,
linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.

Selected PFAS surrogate recoveries are biased due to matrix effects.ô

REPORT OF ANALYSIS

Surrogate recoveries low for selected analytes - PFAS LORs not raised since S/N >10.
LOR raised for 8:2diPAP in sample N25/005950 due to low surrogate recovery.

[redacted]

[redacted], Analyst
Organics - NSW
Accreditation No. 198

24-APR-2025

WORLD RECOGNISED
ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

* Denotes the analyte or test method is not within our ISO/IEC 17025 scope of accreditation.

Measurement Uncertainty is available upon request.

Note: Sampling date(s) have been provided by the client.
The testing was undertaken at: [redacted]

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2513390**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	[redacted]	Address	[redacted]
E-mail		E-mail	
Telephone		Telephone	
Facsimile	: ----	Facsimile	
Project	: NT_0990_PFASOMP_25	Page	: 1 of 4
Order number	: 60676801/4.02	Quote number	: ES2019AECOMAU0030 (SY/139/19 V3)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Tindal Biannual GME		
Sampler	: [redacted]		

Dates

Date Samples Received	: 13-May-2025 10:30	Issue Date	: 14-May-2025
Client Requested Due Date	: 20-May-2025	Scheduled Reporting Date	: **20-May-2025**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 10.2'C 9.3'C 2.7'C - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 70 / 59

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- 14/05/2025 - This is an updated SRN which indicates the sample ID and sampling date corrections made for all samples.
- 14/05/2025 - This is an updated SRN which indicates the addition of analysis to extra samples and the reallocation of samples into NT_0990_PFASMGMT_25.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Samples 24 and 32 not received.**
- **Samples 70-75 received extra and placed on hold.**
- **QC Forward analysis will be conducted by NMI.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	(On Hold) WATER No analysis requested	WATER - EP231X PFAS - Full Suite (31 analytes)	WATER - EP231X-LL PFAS - Full Suite (31 analytes) Low Level
ES2513390-001	30-Apr-2025 00:00	0990_POT131_250430			✓
ES2513390-002	30-Apr-2025 00:00	0990_QC300_250430		✓	
ES2513390-003	30-Apr-2025 00:00	0990_QC400_250430	✓		
ES2513390-004	30-Apr-2025 00:00	0990_QC500_250430	✓		
ES2513390-005	02-May-2025 00:00	0990_OTH114_250502		✓	
ES2513390-006	02-May-2025 00:00	0990_OTH120_250502		✓	
ES2513390-007	02-May-2025 00:00	0990_OTH113_250502		✓	
ES2513390-008	02-May-2025 00:00	0990_QC301_250502		✓	
ES2513390-009	02-May-2025 00:00	0990_QC401_250502	✓		
ES2513390-010	06-May-2025 00:00	0990_MW137_250506		✓	
ES2513390-011	06-May-2025 00:00	0990_MW138_250506		✓	
ES2513390-012	06-May-2025 00:00	0990_QC100_250506		✓	
ES2513390-013	06-May-2025 00:00	0990_OTH115_250506		✓	
ES2513390-014	06-May-2025 00:00	0990_MW136_250506			✓
ES2513390-015	06-May-2025 00:00	0990_MW815_250506			✓
ES2513390-016	06-May-2025 00:00	0990_MW133_250506			✓
ES2513390-017	06-May-2025 00:00	0990_MW109_250506		✓	
ES2513390-018	06-May-2025 00:00	0990_QC103_250506		✓	
ES2513390-019	06-May-2025 00:00	0990_QC302_250506		✓	
ES2513390-020	06-May-2025 00:00	0990_QC402_250506	✓		
ES2513390-021	06-May-2025 00:00	0990_MW109D_250506		✓	
ES2513390-022	06-May-2025 00:00	0990_MW111_250506		✓	
ES2513390-023	06-May-2025 00:00	0990_MW111D_250506		✓	
ES2513390-025	07-May-2025 00:00	0990_OTH112_250507		✓	
ES2513390-026	07-May-2025 00:00	0990_MW205_250507		✓	
ES2513390-027	07-May-2025 00:00	0990_QC102_250507		✓	
ES2513390-028	07-May-2025 00:00	0990_QC411_250507	✓		
ES2513390-029	07-May-2025 00:00	0990_QC511_250507	✓		
ES2513390-030	08-May-2025 00:00	0990_QC312_250508		✓	
ES2513390-031	08-May-2025 00:00	0990_QC412_250508	✓		
ES2513390-032	08-May-2025 00:00	0990_QC512_250508	✓		
ES2513390-033	06-May-2025 00:00	0990_MW803S_250506		✓	
ES2513390-034	06-May-2025 00:00	0990_MW104_250506		✓	
ES2513390-036	06-May-2025 00:00	0990_MW107_250506		✓	
ES2513390-037	06-May-2025 00:00	0990_MW110_250506		✓	

			(On Hold) WATER No analysis requested	WATER - EP231X PFAS - Full Suite (31 analytes)	WATER - EP231X-LL PFAS - Full Suite (31 analytes) Low Level
ES2513390-038	06-May-2025 00:00	0990_MW118I_250506		✓	
ES2513390-039	06-May-2025 00:00	0990_QC310_250506		✓	
ES2513390-040	06-May-2025 00:00	0990_QC410_250506	✓		
ES2513390-041	06-May-2025 00:00	0990_QC510_250506	✓		
ES2513390-042	07-May-2025 00:00	0990_OTH111_250507			✓
ES2513390-043	06-May-2025 00:00	0990_MW144_250506			✓
ES2513390-044	06-May-2025 00:00	0990_MW142_250506		✓	
ES2513390-045	06-May-2025 00:00	0990_MW814_250506		✓	
ES2513390-046	06-May-2025 00:00	0990_MW400_250506		✓	
ES2513390-047	06-May-2025 00:00	0990_QC110_250506		✓	
ES2513390-048	06-May-2025 00:00	0990_MW130_250506		✓	
ES2513390-049	06-May-2025 00:00	0990_MW231_250506		✓	
ES2513390-050	06-May-2025 00:00	0990_MW803D_250506		✓	
ES2513390-051	06-May-2025 00:00	0990_MW803I_250506		✓	
ES2513390-052	07-May-2025 00:00	0990_MW244_250507		✓	
ES2513390-053	07-May-2025 00:00	0990_QC112_250507		✓	
ES2513390-054	07-May-2025 00:00	0990_POT111_250507			✓
ES2513390-055	07-May-2025 00:00	0990_MW129_250507		✓	
ES2513390-056	07-May-2025 00:00	0990_MW149_250507		✓	
ES2513390-057	07-May-2025 00:00	0990_MW802D_250507		✓	
ES2513390-058	07-May-2025 00:00	0990_MW802S_250507		✓	
ES2513390-059	07-May-2025 00:00	0990_MW802I_250507		✓	
ES2513390-060	07-May-2025 00:00	0990_QC311_250507		✓	
ES2513390-061	07-May-2025 00:00	0990_MW140_250507		✓	
ES2513390-062	07-May-2025 00:00	0990_QC104_250507		✓	
ES2513390-063	07-May-2025 00:00	0990_QC303_250507		✓	
ES2513390-064	07-May-2025 00:00	0990_QC403_250507	✓		
ES2513390-065	07-May-2025 00:00	0990_MW127_250507		✓	
ES2513390-066	07-May-2025 00:00	0990_MW146_250507		✓	
ES2513390-067	08-May-2025 00:00	0990_MW801S_250508		✓	
ES2513390-068	08-May-2025 00:00	0990_MW134_250508		✓	
ES2513390-069	08-May-2025 00:00	0990_MW135_250508		✓	
ES2513390-071	08-May-2025 00:00	0990_MW278_250508		✓	
ES2513390-072	08-May-2025 00:00	0990_MW403_250508		✓	
ES2513390-073	08-May-2025 00:00	0990_MW118D_250508		✓	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT) Email

ESDAT+AECOM-DERP

- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
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[redacted]

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[redacted]

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- Chain of Custody (CoC) (COC) Email
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[redacted]

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- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2513390**	Page	: 1 of 37
Amendment	: **1**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 13-May-2025 10:30
Order number	: 60676801/4.02	Date Analysis Commenced	: 13-May-2025
C-O-C number	: ----	Issue Date	: 23-May-2025 10:58
Sampler	: [redacted]		
Site	: Tindal Biannual GME		
Quote number	: SY/139/19 V3		
No. of samples received	: 70		
No. of samples analysed	: 60		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Organic Chemist	Sydney Organics, Smithfield, NSW
	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (22/05/2025): This report has been amended and re-released to allow the reporting of additional analytical data, specifically method EP231X for sample 0990_MW106_250506 (originally sample 35, now sample 74).
- EP231X: Particular samples required dilution due to the presence of high level contaminants. LOR values have been adjusted accordingly.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT131_250430	0990_QC300_250430	0990_OTH114_250502	0990_OTH120_250502	0990_OTH113_250502
			Sampling date / time	30-Apr-2025 00:00	30-Apr-2025 00:00	02-May-2025 00:00	02-May-2025 00:00	02-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-001	ES2513390-002	ES2513390-005	ES2513390-006	ES2513390-007
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	----	----	----	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	----	<0.01	**0.08**	<0.01	**0.08**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	<0.01	**0.14**	<0.01	**0.10**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	----	----	----	----
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT131_250430	0990_QC300_250430	0990_OTH114_250502	0990_OTH120_250502	0990_OTH113_250502
			Sampling date / time	30-Apr-2025 00:00	30-Apr-2025 00:00	02-May-2025 00:00	02-May-2025 00:00	02-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-001	ES2513390-002	ES2513390-005	ES2513390-006	ES2513390-007
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	----	----	----	----
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT131_250430	0990_QC300_250430	0990_OTH114_250502	0990_OTH120_250502	0990_OTH113_250502
			Sampling date / time	30-Apr-2025 00:00	30-Apr-2025 00:00	02-May-2025 00:00	02-May-2025 00:00	02-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-001	ES2513390-002	ES2513390-005	ES2513390-006	ES2513390-007
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	----	----	----	----
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT131_250430	0990_QC300_250430	0990_OTH114_250502	0990_OTH120_250502	0990_OTH113_250502
			Sampling date / time	30-Apr-2025 00:00	30-Apr-2025 00:00	02-May-2025 00:00	02-May-2025 00:00	02-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-001	ES2513390-002	ES2513390-005	ES2513390-006	ES2513390-007
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	<0.002	----	----	----	----
Sum of PFAS	----	0.01	µg/L	----	<0.01	**0.22**	<0.01	**0.18**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	<0.002	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	<0.01	**0.22**	<0.01	**0.18**
Sum of PFAS (WA DER List)	----	0.002	µg/L	<0.002	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	<0.01	**0.22**	<0.01	**0.18**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**109**	----	----	----	----
13C4-PFOS	----	0.02	%	----	**100**	**99.5**	**98.2**	**97.6**
13C8-PFOA	----	0.002	%	**105**	----	----	----	----
13C8-PFOA	----	0.02	%	----	**99.2**	**99.2**	**98.6**	**99.6**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC301_250502	0990_MW137_250506	0990_MW138_250506	0990_QC100_250506	0990_OTH115_250506
			Sampling date / time	02-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-008	ES2513390-010	ES2513390-011	ES2513390-012	ES2513390-013
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	**0.03**	**0.05**	**0.05**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	**0.03**	**0.04**	**0.05**	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	**0.19**	**0.35**	**0.34**	**0.07**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	**0.03**	**0.03**	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	**0.25**	**1.10**	**1.14**	**0.11**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	**0.02**	**0.03**	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	**0.01**	**0.01**	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC301_250502	0990_MW137_250506	0990_MW138_250506	0990_QC100_250506	0990_OTH115_250506
			Sampling date / time	02-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-008	ES2513390-010	ES2513390-011	ES2513390-012	ES2513390-013
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	**0.50**	**1.60**	**1.65**	**0.18**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	**0.44**	**1.45**	**1.48**	**0.18**
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	**0.47**	**1.53**	**1.57**	**0.18**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**105**	**99.2**	**96.8**	**100**	**101**
13C8-PFOA	----	0.02	%	**104**	**96.6**	**98.6**	**101**	**96.9**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW136_250506	0990_MW815_250506	0990_MW133_250506	0990_MW109_250506	0990_QC103_250506
			Sampling date / time	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-014	ES2513390-015	ES2513390-016	ES2513390-017	ES2513390-018
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	**0.015**	<0.002	----	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	----	----	**0.08**	**0.08**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	**0.015**	<0.002	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	**0.085**	**0.006**	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	----	----	**0.10**	**0.09**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	**0.004**	<0.002	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	----	----	----	**0.62**	**0.66**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	----	----	**0.06**	**0.06**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	**0.102**	<0.002	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	----	----	**1.45**	**1.49**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	<0.002	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	----	----	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	----	----	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	**0.003**	<0.002	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	----	----	**0.03**	**0.03**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	**0.012**	<0.002	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	----	----	**0.15**	**0.15**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	**0.002**	<0.002	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	----	----	<0.02	<0.02

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW136_250506	0990_MW815_250506	0990_MW133_250506	0990_MW109_250506	0990_QC103_250506
			Sampling date / time	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-014	ES2513390-015	ES2513390-016	ES2513390-017	ES2513390-018
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	**0.003**	<0.002	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	----	----	**0.06**	**0.06**
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	----	----	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	----	----	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	<0.002	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	----	----	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	<0.002	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	----	----	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	<0.002	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	----	----	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	<0.005	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	----	----	<0.05	<0.05
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	<0.005	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	----	----
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	----	----	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	<0.005	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	----	----	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW136_250506	0990_MW815_250506	0990_MW133_250506	0990_MW109_250506	0990_QC103_250506
			Sampling date / time	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-014	ES2513390-015	ES2513390-016	ES2513390-017	ES2513390-018
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	----	----	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	<0.005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	----	----	----	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	<0.005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	----	----	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	<0.002	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	----	----	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	<0.002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	----	----	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	<0.005	----	----
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	----	----	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	<0.005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	----	----	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	<0.005	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW136_250506	0990_MW815_250506	0990_MW133_250506	0990_MW109_250506	0990_QC103_250506
			Sampling date / time	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-014	ES2513390-015	ES2513390-016	ES2513390-017	ES2513390-018
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	----	----	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	<0.005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	----	----	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	<0.002	**0.241**	**0.006**	----	----
Sum of PFAS	----	0.01	µg/L	----	----	----	**2.58**	**2.65**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	<0.002	**0.187**	**0.006**	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	----	----	**2.07**	**2.15**
Sum of PFAS (WA DER List)	----	0.002	µg/L	<0.002	**0.222**	**0.006**	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	----	----	**2.39**	**2.47**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**111**	**108**	**106**	----	----
13C4-PFOS	----	0.02	%	----	----	----	**98.8**	**97.4**
13C8-PFOA	----	0.002	%	**108**	**110**	**104**	----	----
13C8-PFOA	----	0.02	%	----	----	----	**98.0**	**99.9**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC302_250506	0990_MW109D_250506	0990_MW111_250506	0990_MW111D_250506	0990_OTH112_250507
			Sampling date / time	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	07-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-019	ES2513390-021	ES2513390-022	ES2513390-023	ES2513390-025
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	**0.08**	**0.10**	**0.13**	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	**0.10**	**0.12**	**0.14**	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	**0.63**	**0.91**	**1.00**	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	**0.05**	**0.06**	**0.11**	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	**1.43**	**1.73**	**2.65**	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	**0.03**	**0.05**	**0.05**	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	**0.14**	**0.20**	**0.23**	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	**0.02**	**0.03**	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	**0.06**	**0.06**	**0.09**	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC302_250506	0990_MW109D_250506	0990_MW111_250506	0990_MW111D_250506	0990_OTH112_250507
			Sampling date / time	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	07-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-019	ES2513390-021	ES2513390-022	ES2513390-023	ES2513390-025
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	**2.55**	**3.29**	**4.48**	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	**2.06**	**2.64**	**3.65**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	**2.37**	**3.07**	**4.18**	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**93.9**	**99.5**	**98.9**	**100**	**98.2**
13C8-PFOA	----	0.02	%	**101**	**102**	**99.5**	**99.7**	**98.6**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW205_250507	0990_QC102_250507	0990_QC312_250508	0990_MW803S_250506	0990_MW104_250506
			Sampling date / time	07-May-2025 00:00	07-May-2025 00:00	08-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-026	ES2513390-027	ES2513390-030	ES2513390-033	ES2513390-034
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**0.02**	**0.03**	<0.02	**13.5**	**1.79**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**0.02**	**0.04**	<0.02	**11.4**	**1.88**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.20**	**0.20**	<0.01	**64.6**	**9.06**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	**9.91**	**1.22**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.36**	**0.45**	<0.01	**113**	**31.6**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.04	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	**6.1**	**0.9**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	**8.03**	**1.12**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	**0.03**	<0.02	**34.3**	**5.14**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	**4.77**	**0.51**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	**0.01**	<0.01	**15.0**	**1.61**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	**0.52**	**0.03**
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.04	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.04	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.04	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.04	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.10	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.04	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.10	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW205_250507	0990_QC102_250507	0990_QC312_250508	0990_MW803S_250506	0990_MW104_250506
			Sampling date / time	07-May-2025 00:00	07-May-2025 00:00	08-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-026	ES2513390-027	ES2513390-030	ES2513390-033	ES2513390-034
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.10	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.10	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.10	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.04	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.04	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	**0.28**	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.60**	**0.76**	<0.01	**287**	**55.7**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.56**	**0.65**	<0.01	**178**	**40.7**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.58**	**0.72**	<0.01	**260**	**51.7**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**97.3**	**100**	**98.4**	**104**	**99.4**
13C8-PFOA	----	0.02	%	**100**	**100**	**99.0**	**106**	**99.3**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW107_250506	0990_MW110_250506	0990_MW118I_250506	0990_QC310_250506	0990_OTH111_250507
			Sampling date / time	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	07-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-036	ES2513390-037	ES2513390-038	ES2513390-039	ES2513390-042
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	----	----	----	----	<0.002
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**0.02**	**0.18**	**0.09**	<0.02	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	----	----	----	----	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	----	----	----	----	**0.005**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**0.02**	**0.21**	**0.10**	<0.02	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	----	----	----	----	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.17**	**1.41**	**0.66**	<0.01	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	**0.13**	**0.06**	<0.02	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	----	----	----	----	**0.049**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.44**	**3.38**	**1.37**	<0.01	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	----	----	----	----	<0.002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	----	----	----	----	<0.01
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	----	----	----	----	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	**0.07**	**0.08**	<0.02	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	----	----	----	----	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	**0.34**	**0.16**	<0.02	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	----	----	----	----	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	**0.04**	**0.02**	<0.02	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW107_250506	0990_MW110_250506	0990_MW118I_250506	0990_QC310_250506	0990_OTH111_250507
			Sampling date / time	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	07-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-036	ES2513390-037	ES2513390-038	ES2513390-039	ES2513390-042
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	----	----	----	----	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**0.01**	**0.12**	**0.05**	<0.01	----
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	----	----	----	----	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	----	----	----	----	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	----	----	----	----	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	----	----	----	----	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	----	----	----	----	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	----	----	----	----	<0.005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	----	----	----	----	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	----	----	----	----	<0.002
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	----	----	----	----	<0.005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW107_250506	0990_MW110_250506	0990_MW118I_250506	0990_QC310_250506	0990_OTH111_250507
			Sampling date / time	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	07-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-036	ES2513390-037	ES2513390-038	ES2513390-039	ES2513390-042
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	----	----	----	----	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	----	----	----	----	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	----	----	----	----	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	----	----	----	----	<0.002
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	----	----	----	----	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	----	----	----	----	<0.005
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	----	----	----	----	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	----	----	----	----	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW107_250506	0990_MW110_250506	0990_MW118I_250506	0990_QC310_250506	0990_OTH111_250507
			Sampling date / time	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	07-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-036	ES2513390-037	ES2513390-038	ES2513390-039	ES2513390-042
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	----	----	----	----	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	----	----	----	----	**0.054**
Sum of PFAS	----	0.01	µg/L	**0.66**	**5.95**	**2.63**	<0.01	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	----	----	----	----	**0.054**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.61**	**4.79**	**2.03**	<0.01	----
Sum of PFAS (WA DER List)	----	0.002	µg/L	----	----	----	----	**0.054**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.64**	**5.54**	**2.43**	<0.01	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	----	----	----	----	**105**
13C4-PFOS	----	0.02	%	**97.5**	**97.4**	**96.6**	**95.8**	----
13C8-PFOA	----	0.002	%	----	----	----	----	**106**
13C8-PFOA	----	0.02	%	**98.2**	**98.8**	**96.0**	**98.0**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW144_250506	0990_MW142_250506	0990_MW814_250506	0990_MW400_250506	0990_QC110_250506
			Sampling date / time	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-043	ES2513390-044	ES2513390-045	ES2513390-046	ES2513390-047
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	----	----	----	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	<0.02	<0.02	**0.06**	**0.06**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	<0.02	<0.02	**0.08**	**0.08**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	----	**0.02**	**0.02**	**0.48**	**0.46**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	<0.02	<0.02	**0.04**	**0.03**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	**0.02**	**0.04**	**0.75**	**0.74**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	----	----	----	----
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	<0.02	<0.02	**0.08**	**0.08**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW144_250506	0990_MW142_250506	0990_MW814_250506	0990_MW400_250506	0990_QC110_250506
			Sampling date / time	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-043	ES2513390-044	ES2513390-045	ES2513390-046	ES2513390-047
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	<0.01	<0.01	**0.03**	**0.03**
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	----	----	----	----
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW144_250506	0990_MW142_250506	0990_MW814_250506	0990_MW400_250506	0990_QC110_250506
			Sampling date / time	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-043	ES2513390-044	ES2513390-045	ES2513390-046	ES2513390-047
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	----	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	----	----	----	----
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	**0.012**	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW144_250506	0990_MW142_250506	0990_MW814_250506	0990_MW400_250506	0990_QC110_250506
			Sampling date / time	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-043	ES2513390-044	ES2513390-045	ES2513390-046	ES2513390-047
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	**0.012**	----	----	----	----
Sum of PFAS	----	0.01	µg/L	----	**0.04**	**0.06**	**1.54**	**1.50**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	<0.002	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	**0.04**	**0.06**	**1.23**	**1.20**
Sum of PFAS (WA DER List)	----	0.002	µg/L	**0.012**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	**0.04**	**0.06**	**1.40**	**1.37**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**104**	----	----	----	----
13C4-PFOS	----	0.02	%	----	**98.1**	**101**	**99.1**	**96.3**
13C8-PFOA	----	0.002	%	**104**	----	----	----	----
13C8-PFOA	----	0.02	%	----	**95.0**	**98.0**	**96.6**	**97.9**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW130_250506	0990_MW231_250506	0990_MW803D_250506	0990_MW803I_250506	0990_MW244_250507
			Sampling date / time	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	07-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-048	ES2513390-049	ES2513390-050	ES2513390-051	ES2513390-052
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	**56.5**	**40.6**	**17.7**	**0.46**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	**50.2**	**32.7**	**15.4**	**0.87**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.02**	**256**	**200**	**66.7**	**4.61**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	**43.0**	**33.3**	**7.58**	**0.37**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.01**	**470**	**1230**	**63.5**	**8.68**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.43	<0.42	<0.04	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	**20.2**	**22.2**	**6.5**	**0.3**
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	**39.4**	**26.9**	**8.08**	**0.58**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	**197**	**103**	**41.0**	**1.13**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	**33.8**	**14.4**	**5.22**	**0.70**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	**72.9**	**34.8**	**9.16**	**0.81**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	**2.52**	**2.78**	**0.12**	**0.06**
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.43	<0.42	<0.04	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.43	<0.42	<0.04	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.43	<0.42	<0.04	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.43	<0.42	<0.04	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<1.07	<1.05	<0.11	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.43	<0.42	<0.04	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<1.07	<1.05	<0.11	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW130_250506	0990_MW231_250506	0990_MW803D_250506	0990_MW803I_250506	0990_MW244_250507
			Sampling date / time	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	06-May-2025 00:00	07-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-048	ES2513390-049	ES2513390-050	ES2513390-051	ES2513390-052
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<1.07	<1.05	<0.11	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<1.07	<1.05	<0.11	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<1.07	<1.05	<0.11	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.43	<0.42	<0.04	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.43	<0.42	<0.04	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.43	<0.42	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	**5.89**	**1.37**	**0.56**	**2.35**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	**0.89**	**2.91**	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.43	<0.42	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.03**	**1270**	**1770**	**250**	**21.0**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.03**	**726**	**1430**	**130**	**13.3**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.03**	**1150**	**1680**	**218**	**19.6**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**95.5**	**103**	**108**	**112**	**96.4**
13C8-PFOA	----	0.02	%	**99.3**	**106**	**113**	**103**	**96.4**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC112_250507	0990_POT111_250507	0990_MW129_250507	0990_MW149_250507	0990_MW802D_250507
			Sampling date / time	07-May-2025 00:00	07-May-2025 00:00	07-May-2025 00:00	07-May-2025 00:00	07-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-053	ES2513390-054	ES2513390-055	ES2513390-056	ES2513390-057
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	----	<0.002	----	----	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**0.45**	----	**49.3**	**27.5**	**0.12**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	----	<0.002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	----	<0.002	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**0.79**	----	**39.6**	**33.7**	**0.13**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	----	<0.002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**4.90**	----	**155**	**200**	**0.86**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	**0.36**	----	**12.4**	**23.6**	**0.09**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	----	<0.002	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**7.36**	----	**342**	**336**	**2.78**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	----	<0.002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	<0.04	<0.04	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	----	<0.01	----	----	----
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	**0.3**	----	**42.3**	**8.3**	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	----	<0.002	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	**0.58**	----	**91.3**	**10.7**	**0.10**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	----	<0.002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**1.08**	----	**233**	**47.2**	**0.38**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	----	<0.002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	**0.68**	----	**53.0**	**5.04**	**0.05**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC112_250507	0990_POT111_250507	0990_MW129_250507	0990_MW149_250507	0990_MW802D_250507
			Sampling date / time	07-May-2025 00:00	07-May-2025 00:00	07-May-2025 00:00	07-May-2025 00:00	07-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-053	ES2513390-054	ES2513390-055	ES2513390-056	ES2513390-057
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	----	<0.002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**0.80**	----	**76.7**	**12.6**	**0.14**
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	----	<0.002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	**0.05**	----	**0.21**	**0.25**	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	----	<0.002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	<0.04	<0.04	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	----	<0.002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	<0.04	<0.04	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	----	<0.002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	<0.04	<0.04	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	----	<0.002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	<0.04	<0.04	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	----	<0.005	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	<0.11	<0.11	<0.05
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	----	<0.005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	----	<0.002	----	----	----
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	**0.06**	**0.41**	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	----	<0.005	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	<0.11	<0.11	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC112_250507	0990_POT111_250507	0990_MW129_250507	0990_MW149_250507	0990_MW802D_250507
			Sampling date / time	07-May-2025 00:00	07-May-2025 00:00	07-May-2025 00:00	07-May-2025 00:00	07-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-053	ES2513390-054	ES2513390-055	ES2513390-056	ES2513390-057
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	----	<0.005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	<0.11	<0.11	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	----	<0.005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	<0.11	<0.11	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	----	<0.005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	<0.11	<0.11	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	----	<0.002	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	<0.04	<0.04	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	----	<0.002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	<0.04	<0.04	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	----	<0.005	----	----	----
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	----	<0.005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	**2.37**	----	**5.35**	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	----	<0.005	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC112_250507	0990_POT111_250507	0990_MW129_250507	0990_MW149_250507	0990_MW802D_250507
			Sampling date / time	07-May-2025 00:00	07-May-2025 00:00	07-May-2025 00:00	07-May-2025 00:00	07-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-053	ES2513390-054	ES2513390-055	ES2513390-056	ES2513390-057
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	**0.26**	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	----	<0.005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	----	<0.002	----	----	----
Sum of PFAS	----	0.01	µg/L	**19.8**	----	**1110**	**722**	**4.69**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	----	<0.002	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**12.3**	----	**497**	**536**	**3.64**
Sum of PFAS (WA DER List)	----	0.002	µg/L	----	<0.002	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**18.5**	----	**1050**	**647**	**4.43**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	----	**108**	----	----	----
13C4-PFOS	----	0.02	%	**101**	----	**102**	**85.5**	**99.2**
13C8-PFOA	----	0.002	%	----	**107**	----	----	----
13C8-PFOA	----	0.02	%	**101**	----	**97.1**	**95.0**	**100**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW802S_250507	0990_MW802I_250507	0990_QC311_250507	0990_MW140_250507	0990_QC104_250507
			Sampling date / time	07-May-2025 00:00	07-May-2025 00:00	07-May-2025 00:00	07-May-2025 00:00	07-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-058	ES2513390-059	ES2513390-060	ES2513390-061	ES2513390-062
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**1.80**	**3.06**	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**1.67**	**3.63**	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**6.32**	**19.8**	<0.01	**0.08**	**0.08**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	**0.19**	**2.30**	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**1.61**	**61.3**	<0.01	**0.14**	**0.14**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.04	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	**0.4**	**1.5**	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	**0.42**	**1.67**	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**1.85**	**8.83**	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	**0.16**	**1.10**	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**0.25**	**3.11**	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.04	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.04	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.04	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.04	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.04	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.11	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	**0.20**	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.11	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW802S_250507	0990_MW802I_250507	0990_QC311_250507	0990_MW140_250507	0990_QC104_250507
			Sampling date / time	07-May-2025 00:00	07-May-2025 00:00	07-May-2025 00:00	07-May-2025 00:00	07-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-058	ES2513390-059	ES2513390-060	ES2513390-061	ES2513390-062
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.11	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.11	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.11	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.04	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.04	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	**0.09**	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**15.3**	**108**	<0.01	**0.22**	**0.22**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**7.93**	**81.1**	<0.01	**0.22**	**0.22**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**12.8**	**100**	<0.01	**0.22**	**0.22**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**98.9**	**97.2**	**98.1**	**98.7**	**101**
13C8-PFOA	----	0.02	%	**99.2**	**95.2**	**99.9**	**101**	**98.8**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC303_250507	0990_MW127_250507	0990_MW146_250507	0990_MW801S_250508	0990_MW134_250508
			Sampling date / time	07-May-2025 00:00	07-May-2025 00:00	07-May-2025 00:00	08-May-2025 00:00	08-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-063	ES2513390-065	ES2513390-066	ES2513390-067	ES2513390-068
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	**0.17**	**2.11**	**0.02**	**0.10**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	**0.19**	**2.57**	**0.02**	**0.12**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	**1.40**	**14.2**	**0.14**	**0.72**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	**0.11**	**2.20**	<0.02	**0.06**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	**3.52**	**38.7**	**0.30**	**1.34**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	**0.03**	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	**0.9**	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	**0.12**	**1.19**	<0.02	**0.02**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	**0.42**	**5.94**	**0.02**	**0.12**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	**0.04**	**0.54**	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	**0.11**	**1.55**	<0.01	**0.04**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	**0.02**	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	**0.12**	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC303_250507	0990_MW127_250507	0990_MW146_250507	0990_MW801S_250508	0990_MW134_250508
			Sampling date / time	07-May-2025 00:00	07-May-2025 00:00	07-May-2025 00:00	08-May-2025 00:00	08-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-063	ES2513390-065	ES2513390-066	ES2513390-067	ES2513390-068
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	**6.15**	**71.5**	**0.50**	**2.56**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	**4.92**	**52.9**	**0.44**	**2.06**
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	**5.78**	**65.1**	**0.48**	**2.34**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**98.5**	**99.6**	**99.5**	**95.3**	**94.2**
13C8-PFOA	----	0.02	%	**102**	**99.4**	**96.8**	**97.3**	**97.6**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW135_250508	0990_MW278_250508	0990_MW403_250508	0990_MW118D_250508	0990_MW106_250506
			Sampling date / time	08-May-2025 00:00	08-May-2025 00:00	08-May-2025 00:00	08-May-2025 00:00	06-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-069	ES2513390-071	ES2513390-072	ES2513390-073	ES2513390-074
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	**0.61**	<0.02	**0.08**	**0.10**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	**0.34**	<0.02	**0.08**	**0.08**
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.01**	**3.15**	<0.01	**0.67**	**0.41**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	**0.23**	<0.02	**0.05**	**0.04**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.04**	**7.53**	<0.01	**1.33**	**0.62**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	**0.1**	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	**0.06**	<0.02	**0.10**	**0.03**
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	**0.36**	<0.02	**0.12**	**0.14**
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	**0.04**	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	**0.12**	<0.01	**0.05**	**0.04**
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW135_250508	0990_MW278_250508	0990_MW403_250508	0990_MW118D_250508	0990_MW106_250506
			Sampling date / time	08-May-2025 00:00	08-May-2025 00:00	08-May-2025 00:00	08-May-2025 00:00	06-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513390-069	ES2513390-071	ES2513390-072	ES2513390-073	ES2513390-074
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	**0.11**	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.05**	**12.8**	<0.01	**2.74**	**1.50**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.05**	**10.7**	<0.01	**2.00**	**1.03**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.05**	**11.9**	<0.01	**2.56**	**1.34**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**94.0**	**98.6**	**94.9**	**110**	**96.3**
13C8-PFOA	----	0.02	%	**96.6**	**104**	**110**	**108**	**90.9**

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2513390**	Page	: 1 of 20
Amendment	: **1**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	:
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 13-May-2025
Order number	: 60676801/4.02	Date Analysis Commenced	: 13-May-2025
C-O-C number	: ----	Issue Date	: 23-May-2025
Sampler	: [redacted], [redacted]		
Site	: Tindal Biannual GME		
Quote number	: SY/139/19 V3		
No. of samples received	: 70		
No. of samples analysed	: 60		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Organic Chemist	Sydney Organics, Smithfield, NSW
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6572054)									
ES2513390-011	0990_MW138_250506	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.35	0.33	6.6	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	1.10	1.14	3.8	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.05	0.05	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.04	0.05	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	0.03	0.03	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6572430)									
ES2513390-056	0990_MW149_250507	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 (0.04)*	µg/L	200	206	2.9	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 (0.04)*	µg/L	336	350	4.0	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02 (0.04)*	µg/L	27.5	27.9	1.3	0% - 20%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02 (0.04)*	µg/L	33.7	36.4	7.8	0% - 20%
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02 (0.04)*	µg/L	23.6	25.8	8.8	0% - 20%
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02 (0.04)*	µg/L	<0.04	<0.04	0.0	No Limit
ES2513390-067	0990_MW801S_250508	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.14	0.14	0.0	0% - 50%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.30	0.29	0.0	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6575313)									

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6575313) - continued									
ES2513738-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2513842-007	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6575639)									
ES2513842-001	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	0.005	0.004	0.0	No Limit
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	0.0	No Limit
ES2513842-004	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	0.003	0.003	0.0	No Limit
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6572054)									
ES2513390-011	0990_MW138_250506	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.01	0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.02	0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6572054) - continued									
ES2513390-011	0990_MW138_250506	EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6572430)									
ES2513390-056	0990_MW149_250507	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 (0.04)*	µg/L	12.6	12.8	1.6	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02 (0.04)*	µg/L	10.7	10.8	0.3	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02 (0.04)*	µg/L	47.2	48.5	2.8	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02 (0.04)*	µg/L	5.04	4.92	2.4	0% - 20%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02 (0.04)*	µg/L	0.25	0.26	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02 (0.04)*	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02 (0.04)*	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02 (0.04)*	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02 (0.04)*	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05 (0.11)*	µg/L	<0.11	<0.11	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1 (0.2)*	µg/L	8.3	8.7	3.7	0% - 20%
ES2513390-067	0990_MW801S_250508	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6575313)									
ES2513738-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6575313) - continued									
ES2513738-001	Anonymous	EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2513842-007	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6575639)									
ES2513842-001	Anonymous	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2513842-004	Anonymous	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	0.002	0.002	0.0	No Limit
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6575639) - continued									
ES2513842-004	Anonymous	EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6572054)									
ES2513390-011	0990_MW138_250506	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6572430)									
ES2513390-056	0990_MW149_250507	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02 (0.04)*	µg/L	0.41	0.39	5.9	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02 (0.04)*	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02 (0.04)*	µg/L	<0.04	<0.04	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05 (0.11)*	µg/L	<0.11	<0.11	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05 (0.11)*	µg/L	<0.11	<0.11	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05 (0.11)*	µg/L	<0.11	<0.11	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05 (0.11)*	µg/L	<0.11	<0.11	0.0	No Limit
ES2513390-067	0990_MW801S_250508	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6572430) - continued									
ES2513390-067	0990_MW801S_250508	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6575313)									
ES2513738-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2513842-007	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6575639)									
ES2513842-001	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6575639) - continued									
ES2513842-001	Anonymous	EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
ES2513842-004	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6572054)									
ES2513390-011	0990_MW138_250506	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6572430)									
ES2513390-056	0990_MW149_250507	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6572430) - continued									
ES2513390-067	0990_MW801S_250508	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6575313)									
ES2513738-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2513842-007	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6575639)									
ES2513842-001	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.0	No Limit
ES2513842-004	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6575639) - continued									
ES2513842-004	Anonymous	EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6572054)									
ES2513390-011	0990_MW138_250506	EP231X: Sum of PFAS	----	0.01	µg/L	1.60	1.63	1.9	0% - 20%
EP231P: PFAS Sums (QC Lot: 6572430)									
ES2513390-056	0990_MW149_250507	EP231X: Sum of PFAS	----	0.01 (0.04)*	µg/L	722	749	3.8	0% - 20%
ES2513390-067	0990_MW801S_250508	EP231X: Sum of PFAS	----	0.01	µg/L	0.50	0.49	2.0	0% - 20%
EP231P: PFAS Sums (QC Lot: 6575313)									
ES2513738-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.01	0.02	66.7	No Limit
ES2513842-007	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6572054)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	95.1	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	118	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	94.3	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	97.9	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	86.9	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6572429)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	94.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	112	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	93.5	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	109	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	110	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	106	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6572430)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	95.5	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	105	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	91.7	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	110	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	109	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6575313)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	89.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	92.5	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	103	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	97.3	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	97.5	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6575639)								
EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	0.025 µg/L	87.6	72.0	130
EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	0.025 µg/L	102	71.0	127

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6575639) - continued								
EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	0.025 µg/L	87.7	68.0	131
EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	0.025 µg/L	101	69.0	134
EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	0.025 µg/L	87.9	65.0	140
EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	0.025 µg/L	93.9	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6594881)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	86.6	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	110	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	90.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	105	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	97.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	95.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6572054)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	117	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	98.1	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	90.7	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	104	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	103	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	114	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	107	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	113	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	102	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	122	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6572429)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	105	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	97.5	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	107	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.7	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	112	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	110	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	114	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	110	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	117	65.0	144

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6572429) - continued								
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	110	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6572430)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	108	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	97.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	107	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	94.0	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	115	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	111	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	111	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	103	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	118	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	104	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	111	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6575313)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	92.5	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	98.4	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	87.5	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	93.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	90.5	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	108	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	99.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	90.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	105	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6575639)								
EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	0.125 µg/L	102	73.0	129
EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.025 µg/L	90.1	72.0	129
EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	0.025 µg/L	94.4	72.0	129
EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	0.025 µg/L	85.6	72.0	130
EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	0.025 µg/L	99.6	71.0	133
EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	0.025 µg/L	100	69.0	130
EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	0.025 µg/L	107	71.0	129
EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	0.025 µg/L	106	69.0	133

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6575639) - continued								
EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	0.025 µg/L	109	72.0	134
EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	0.025 µg/L	106	65.0	144
EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	0.0625 µg/L	102	71.0	132
EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	0.025 µg/L	98.8	65.6	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6594881)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	104	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	110	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	84.1	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	106	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	96.9	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	105	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	109	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	119	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	97.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	117	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6572054)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	93.4	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	128	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	89.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	108	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	108	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	99.4	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	116	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6572429)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	113	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	118	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	99.6	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	98.1	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	110	57.6	145

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6572429) - continued								
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	107	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	118	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6572430)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	116	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	124	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	114	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	98.7	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	110	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	100.0	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	109	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6575313)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	96.7	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	122	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	126	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	97.8	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	102	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	99.9	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	95.7	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6575639)								
EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	0.025 µg/L	94.6	67.0	137
EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	0.0625 µg/L	107	68.0	141
EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	0.0625 µg/L	106	61.1	139
EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	0.0625 µg/L	101	72.3	128
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	0.0625 µg/L	96.4	63.2	134

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6575639) - continued								
EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	0.025 µg/L	108	65.0	136
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	0.025 µg/L	96.5	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6594881)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	105	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	107	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	105	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	103	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	98.1	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	116	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	113	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6572054)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	76.6	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	97.8	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	105	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	89.8	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6572429)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	81.4	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	105	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	118	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	110	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6572430)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	83.4	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	94.8	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	98.5	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	113	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6575313)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	76.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	121	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	109	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	90.8	71.4	144

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6575639)								
EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	0.025 µg/L	88.6	63.0	143
EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	0.025 µg/L	99.1	64.0	140
EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	0.025 µg/L	103	67.0	138
EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	0.025 µg/L	97.5	75.2	137
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6594881)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	91.7	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	111	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	115	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	101	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6572430)							
ES2513390-057	0990_MW802D_250507	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	99.2	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	102	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	90.4	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	131	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	# Not Determined	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	120	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6575313)							
ES2513842-007	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	89.8	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	96.4	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	98.5	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	103	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	99.9	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	91.8	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6575639)							
ES2513842-002	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.025 µg/L	96.2	72.0	130
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.025 µg/L	106	71.0	127
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.025 µg/L	87.1	68.0	131
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.025 µg/L	103	69.0	134

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6575639) - continued							
ES2513842-002	Anonymous	EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.025 µg/L	97.8	65.0	140
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.025 µg/L	96.2	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6572430)							
ES2513390-057	0990_MW802D_250507	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	117	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	105	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	109	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	90.8	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	99.9	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	110	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	112	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	101	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	112	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	109	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	104	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6575313)							
ES2513842-007	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	91.2	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	102	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	99.6	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	91.4	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	103	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	86.9	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	110	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	121	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	87.3	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	82.3	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	112	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6575639)							
ES2513842-002	Anonymous	EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.125 µg/L	117	73.0	129
		EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.025 µg/L	93.7	72.0	129
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.025 µg/L	101	72.0	129
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.025 µg/L	91.1	72.0	130
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.025 µg/L	104	71.0	133
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.025 µg/L	99.9	69.0	130
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.025 µg/L	109	71.0	129
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.025 µg/L	107	69.0	133
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.025 µg/L	118	72.0	134
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.025 µg/L	111	65.0	144
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0625 µg/L	101	71.0	132

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6575639) - continued							
ES2513842-002	Anonymous	EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.025 µg/L	96.2	65.6	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6572430)							
ES2513390-057	0990_MW802D_250507	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	109	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	118	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	97.4	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	95.9	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	100	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	102	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	112	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6575313)							
ES2513842-007	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	98.9	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	123	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	109	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	101	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	99.2	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	117	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	96.8	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6575639)							
ES2513842-002	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.025 µg/L	90.3	67.0	137
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0625 µg/L	94.6	68.0	141
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0625 µg/L	106	61.1	139
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0625 µg/L	107	72.3	128
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0625 µg/L	91.8	63.2	134
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.025 µg/L	90.4	65.0	136

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6575639) - continued							
ES2513842-002	Anonymous	EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.025 µg/L	103	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6572430)							
ES2513390-057	0990_MW802D_250507	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	86.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	107	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	113	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	112	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6575313)							
ES2513842-007	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	76.1	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	122	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	71.4	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	107	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6575639)							
ES2513842-002	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.025 µg/L	82.0	63.0	143
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.025 µg/L	97.4	64.0	140
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.025 µg/L	119	67.0	138
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.025 µg/L	118	75.2	137

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2513390**	Page	: 1 of 13
Amendment	: **1**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 13-May-2025
Site	: Tindal Biannual GME	Issue Date	: 23-May-2025
Sampler	: [redacted], [redacted]	No. of samples received	: 70
Order number	: 60676801/4.02	No. of samples analysed	: 60

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	ES2513390--057	0990_MW802D_250507	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	5	69	7.25	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	69	2.90	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0990_OTH114_250502,	0990_OTH120_250502,	**02-May-2025**	**14-May-2025**	29-Oct-2025	✓	**20-May-2025**	29-Oct-2025	✓
0990_OTH113_250502,	0990_QC301_250502							
HDPE (no PTFE) (EP231X)								
0990_MW104_250506,	0990_MW107_250506,	**06-May-2025**	**14-May-2025**	02-Nov-2025	✓	**16-May-2025**	02-Nov-2025	✓
0990_MW110_250506,	0990_MW118I_250506,							
0990_QC310_250506,	0990_MW142_250506,							
0990_MW814_250506,	0990_MW400_250506,							
0990_QC110_250506,	0990_MW130_250506							
HDPE (no PTFE) (EP231X)								
0990_MW803S_250506,	0990_MW231_250506,	**06-May-2025**	**14-May-2025**	02-Nov-2025	✓	**19-May-2025**	02-Nov-2025	✓
0990_MW803D_250506,	0990_MW803I_250506							
HDPE (no PTFE) (EP231X)								

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids - Continued								
0990_MW137_250506, 0990_QC100_250506, 0990_MW109_250506, 0990_QC302_250506, 0990_MW111_250506,	0990_MW138_250506, 0990_OTH115_250506, 0990_QC103_250506, 0990_MW109D_250506, 0990_MW111D_250506	**06-May-2025**	**14-May-2025**	02-Nov-2025	✓	**20-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_MW136_250506, 0990_MW133_250506,	0990_MW815_250506, 0990_MW144_250506	**06-May-2025**	**15-May-2025**	02-Nov-2025	✓	**19-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW106_250506		**06-May-2025**	**22-May-2025**	02-Nov-2025	✓	**23-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW244_250507, 0990_MW802D_250507, 0990_QC311_250507, 0990_QC104_250507, 0990_MW127_250507,	0990_QC112_250507, 0990_MW802S_250507, 0990_MW140_250507, 0990_QC303_250507, 0990_MW146_250507	**07-May-2025**	**14-May-2025**	03-Nov-2025	✓	**16-May-2025**	03-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW129_250507, 0990_MW802I_250507	0990_MW149_250507,	**07-May-2025**	**14-May-2025**	03-Nov-2025	✓	**19-May-2025**	03-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_OTH112_250507, 0990_QC102_250507	0990_MW205_250507,	**07-May-2025**	**14-May-2025**	03-Nov-2025	✓	**20-May-2025**	03-Nov-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_OTH111_250507,	0990_POT111_250507	**07-May-2025**	**15-May-2025**	03-Nov-2025	✓	**19-May-2025**	03-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW801S_250508, 0990_MW135_250508	0990_MW134_250508,	**08-May-2025**	**14-May-2025**	04-Nov-2025	✓	**16-May-2025**	04-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC312_250508		**08-May-2025**	**14-May-2025**	04-Nov-2025	✓	**20-May-2025**	04-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW278_250508, 0990_MW118D_250508	0990_MW403_250508,	**08-May-2025**	**15-May-2025**	04-Nov-2025	✓	**20-May-2025**	04-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC300_250430		**30-Apr-2025**	**14-May-2025**	27-Oct-2025	✓	**20-May-2025**	27-Oct-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT131_250430		**30-Apr-2025**	**15-May-2025**	27-Oct-2025	✓	**19-May-2025**	27-Oct-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X) 0990_OTH114_250502, 0990_OTH113_250502,	0990_OTH120_250502, 0990_QC301_250502	**02-May-2025**	**14-May-2025**	29-Oct-2025	✓	**20-May-2025**	29-Oct-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW104_250506, 0990_MW110_250506, 0990_QC310_250506, 0990_MW814_250506, 0990_QC110_250506,	0990_MW107_250506, 0990_MW118I_250506, 0990_MW142_250506, 0990_MW400_250506, 0990_MW130_250506	**06-May-2025**	**14-May-2025**	02-Nov-2025	✓	**16-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW803S_250506, 0990_MW803D_250506,	0990_MW231_250506, 0990_MW803I_250506	**06-May-2025**	**14-May-2025**	02-Nov-2025	✓	**19-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW137_250506, 0990_QC100_250506, 0990_MW109_250506, 0990_QC302_250506, 0990_MW111_250506,	0990_MW138_250506, 0990_OTH115_250506, 0990_QC103_250506, 0990_MW109D_250506, 0990_MW111D_250506	**06-May-2025**	**14-May-2025**	02-Nov-2025	✓	**20-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_MW136_250506, 0990_MW133_250506,	0990_MW815_250506, 0990_MW144_250506	**06-May-2025**	**15-May-2025**	02-Nov-2025	✓	**19-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW106_250506		**06-May-2025**	**22-May-2025**	02-Nov-2025	✓	**23-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW244_250507, 0990_MW802D_250507, 0990_QC311_250507, 0990_QC104_250507, 0990_MW127_250507,	0990_QC112_250507, 0990_MW802S_250507, 0990_MW140_250507, 0990_QC303_250507, 0990_MW146_250507	**07-May-2025**	**14-May-2025**	03-Nov-2025	✓	**16-May-2025**	03-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW129_250507, 0990_MW802I_250507	0990_MW149_250507,	**07-May-2025**	**14-May-2025**	03-Nov-2025	✓	**19-May-2025**	03-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_OTH112_250507, 0990_QC102_250507	0990_MW205_250507,	**07-May-2025**	**14-May-2025**	03-Nov-2025	✓	**20-May-2025**	03-Nov-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_OTH111_250507,	0990_POT111_250507	**07-May-2025**	**15-May-2025**	03-Nov-2025	✓	**19-May-2025**	03-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW801S_250508, 0990_MW135_250508	0990_MW134_250508,	**08-May-2025**	**14-May-2025**	04-Nov-2025	✓	**16-May-2025**	04-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC312_250508		**08-May-2025**	**14-May-2025**	04-Nov-2025	✓	**20-May-2025**	04-Nov-2025	✓
HDPE (no PTFE) (EP231X)								

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231B: Perfluoroalkyl Carboxylic Acids - Continued							
0990_MW278_250508, 0990_MW403_250508, 0990_MW118D_250508	**08-May-2025**	**15-May-2025**	04-Nov-2025	✓	**20-May-2025**	04-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC300_250430	**30-Apr-2025**	**14-May-2025**	27-Oct-2025	✓	**20-May-2025**	27-Oct-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT131_250430	**30-Apr-2025**	**15-May-2025**	27-Oct-2025	✓	**19-May-2025**	27-Oct-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X) 0990_OTH114_250502, 0990_OTH113_250502,	0990_OTH120_250502, 0990_QC301_250502	**02-May-2025**	**14-May-2025**	29-Oct-2025	✓	**20-May-2025**	29-Oct-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW104_250506, 0990_MW110_250506, 0990_QC310_250506, 0990_MW814_250506, 0990_QC110_250506,	0990_MW107_250506, 0990_MW118I_250506, 0990_MW142_250506, 0990_MW400_250506, 0990_MW130_250506	**06-May-2025**	**14-May-2025**	02-Nov-2025	✓	**16-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW803S_250506, 0990_MW803D_250506,	0990_MW231_250506, 0990_MW803I_250506	**06-May-2025**	**14-May-2025**	02-Nov-2025	✓	**19-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW137_250506, 0990_QC100_250506, 0990_MW109_250506, 0990_QC302_250506, 0990_MW111_250506,	0990_MW138_250506, 0990_OTH115_250506, 0990_QC103_250506, 0990_MW109D_250506, 0990_MW111D_250506	**06-May-2025**	**14-May-2025**	02-Nov-2025	✓	**20-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_MW136_250506, 0990_MW133_250506,	0990_MW815_250506, 0990_MW144_250506	**06-May-2025**	**15-May-2025**	02-Nov-2025	✓	**19-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW106_250506		**06-May-2025**	**22-May-2025**	02-Nov-2025	✓	**23-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW244_250507, 0990_MW802D_250507, 0990_QC311_250507, 0990_QC104_250507, 0990_MW127_250507,	0990_QC112_250507, 0990_MW802S_250507, 0990_MW140_250507, 0990_QC303_250507, 0990_MW146_250507	**07-May-2025**	**14-May-2025**	03-Nov-2025	✓	**16-May-2025**	03-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW129_250507, 0990_MW802I_250507	0990_MW149_250507,	**07-May-2025**	**14-May-2025**	03-Nov-2025	✓	**19-May-2025**	03-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_OTH112_250507, 0990_QC102_250507	0990_MW205_250507,	**07-May-2025**	**14-May-2025**	03-Nov-2025	✓	**20-May-2025**	03-Nov-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_OTH111_250507,	0990_POT111_250507	**07-May-2025**	**15-May-2025**	03-Nov-2025	✓	**19-May-2025**	03-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW801S_250508, 0990_MW135_250508	0990_MW134_250508,	**08-May-2025**	**14-May-2025**	04-Nov-2025	✓	**16-May-2025**	04-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC312_250508		**08-May-2025**	**14-May-2025**	04-Nov-2025	✓	**20-May-2025**	04-Nov-2025	✓
HDPE (no PTFE) (EP231X)								

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides - Continued							
0990_MW278_250508, 0990_MW403_250508, 0990_MW118D_250508	**08-May-2025**	**15-May-2025**	04-Nov-2025	✓	**20-May-2025**	04-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC300_250430	**30-Apr-2025**	**14-May-2025**	27-Oct-2025	✓	**20-May-2025**	27-Oct-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT131_250430	**30-Apr-2025**	**15-May-2025**	27-Oct-2025	✓	**19-May-2025**	27-Oct-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH114_250502, 0990_OTH120_250502, 0990_OTH113_250502, 0990_QC301_250502	**02-May-2025**	**14-May-2025**	29-Oct-2025	✓	**20-May-2025**	29-Oct-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW104_250506, 0990_MW107_250506, 0990_MW110_250506, 0990_MW118I_250506, 0990_QC310_250506, 0990_MW142_250506, 0990_MW814_250506, 0990_MW400_250506, 0990_QC110_250506, 0990_MW130_250506	**06-May-2025**	**14-May-2025**	02-Nov-2025	✓	**16-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW803S_250506, 0990_MW231_250506, 0990_MW803D_250506, 0990_MW803I_250506	**06-May-2025**	**14-May-2025**	02-Nov-2025	✓	**19-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW137_250506, 0990_MW138_250506, 0990_QC100_250506, 0990_OTH115_250506, 0990_MW109_250506, 0990_QC103_250506, 0990_QC302_250506, 0990_MW109D_250506, 0990_MW111_250506, 0990_MW111D_250506	**06-May-2025**	**14-May-2025**	02-Nov-2025	✓	**20-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_MW136_250506, 0990_MW815_250506, 0990_MW133_250506, 0990_MW144_250506	**06-May-2025**	**15-May-2025**	02-Nov-2025	✓	**19-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW106_250506	**06-May-2025**	**22-May-2025**	02-Nov-2025	✓	**23-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW244_250507, 0990_QC112_250507, 0990_MW802D_250507, 0990_MW802S_250507, 0990_QC311_250507, 0990_MW140_250507, 0990_QC104_250507, 0990_QC303_250507, 0990_MW127_250507, 0990_MW146_250507	**07-May-2025**	**14-May-2025**	03-Nov-2025	✓	**16-May-2025**	03-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW129_250507, 0990_MW149_250507, 0990_MW802I_250507	**07-May-2025**	**14-May-2025**	03-Nov-2025	✓	**19-May-2025**	03-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_OTH112_250507, 0990_MW205_250507, 0990_QC102_250507	**07-May-2025**	**14-May-2025**	03-Nov-2025	✓	**20-May-2025**	03-Nov-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_OTH111_250507, 0990_POT111_250507	**07-May-2025**	**15-May-2025**	03-Nov-2025	✓	**19-May-2025**	03-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW801S_250508, 0990_MW134_250508, 0990_MW135_250508	**08-May-2025**	**14-May-2025**	04-Nov-2025	✓	**16-May-2025**	04-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC312_250508	**08-May-2025**	**14-May-2025**	04-Nov-2025	✓	**20-May-2025**	04-Nov-2025	✓
HDPE (no PTFE) (EP231X)							

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued							
0990_MW278_250508, 0990_MW403_250508, 0990_MW118D_250508	**08-May-2025**	**15-May-2025**	04-Nov-2025	✓	**20-May-2025**	04-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC300_250430	**30-Apr-2025**	**14-May-2025**	27-Oct-2025	✓	**20-May-2025**	27-Oct-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT131_250430	**30-Apr-2025**	**15-May-2025**	27-Oct-2025	✓	**19-May-2025**	27-Oct-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X) 0990_OTH114_250502, 0990_OTH113_250502,	0990_OTH120_250502, 0990_QC301_250502	**02-May-2025**	**14-May-2025**	29-Oct-2025	✓	**20-May-2025**	29-Oct-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW104_250506, 0990_MW110_250506, 0990_QC310_250506, 0990_MW814_250506, 0990_QC110_250506,	0990_MW107_250506, 0990_MW118I_250506, 0990_MW142_250506, 0990_MW400_250506, 0990_MW130_250506	**06-May-2025**	**14-May-2025**	02-Nov-2025	✓	**16-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW803S_250506, 0990_MW803D_250506,	0990_MW231_250506, 0990_MW803I_250506	**06-May-2025**	**14-May-2025**	02-Nov-2025	✓	**19-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW137_250506, 0990_QC100_250506, 0990_MW109_250506, 0990_QC302_250506, 0990_MW111_250506,	0990_MW138_250506, 0990_OTH115_250506, 0990_QC103_250506, 0990_MW109D_250506, 0990_MW111D_250506	**06-May-2025**	**14-May-2025**	02-Nov-2025	✓	**20-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_MW136_250506, 0990_MW133_250506,	0990_MW815_250506, 0990_MW144_250506	**06-May-2025**	**15-May-2025**	02-Nov-2025	✓	**19-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW106_250506		**06-May-2025**	**22-May-2025**	02-Nov-2025	✓	**23-May-2025**	02-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW244_250507, 0990_MW802D_250507, 0990_QC311_250507, 0990_QC104_250507, 0990_MW127_250507,	0990_QC112_250507, 0990_MW802S_250507, 0990_MW140_250507, 0990_QC303_250507, 0990_MW146_250507	**07-May-2025**	**14-May-2025**	03-Nov-2025	✓	**16-May-2025**	03-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW129_250507, 0990_MW802I_250507	0990_MW149_250507,	**07-May-2025**	**14-May-2025**	03-Nov-2025	✓	**19-May-2025**	03-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_OTH112_250507, 0990_QC102_250507	0990_MW205_250507,	**07-May-2025**	**14-May-2025**	03-Nov-2025	✓	**20-May-2025**	03-Nov-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_OTH111_250507,	0990_POT111_250507	**07-May-2025**	**15-May-2025**	03-Nov-2025	✓	**19-May-2025**	03-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW801S_250508, 0990_MW135_250508	0990_MW134_250508,	**08-May-2025**	**14-May-2025**	04-Nov-2025	✓	**16-May-2025**	04-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC312_250508		**08-May-2025**	**14-May-2025**	04-Nov-2025	✓	**20-May-2025**	04-Nov-2025	✓
HDPE (no PTFE) (EP231X)								

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums - Continued							
0990_MW278_250508, 0990_MW403_250508, 0990_MW118D_250508	**08-May-2025**	**15-May-2025**	04-Nov-2025	✓	**20-May-2025**	04-Nov-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC300_250430	**30-Apr-2025**	**14-May-2025**	27-Oct-2025	✓	**20-May-2025**	27-Oct-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT131_250430	**30-Apr-2025**	**15-May-2025**	27-Oct-2025	✓	**19-May-2025**	27-Oct-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	5	69	**7.25**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	5	69	**7.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	5	69	**7.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	69	**2.90**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction (SPE) followed by negative mode LC-ESI-MS/MS using MRM and isotope dilution or internal standard quantitation. Isotope dilution standards (where commercially available) and surrogates are added to the sample container. The entire contents are transferred to a weak anion exchange (WAX) solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Data quality objectives for internal standard recoveries are based on US EPA method 1633.
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction (SPE) followed by negative mode LC-ESI-MS/MS using MRM and isotope dilution or internal standard quantitation. Isotope dilution standards (where commercially available) and surrogates are added to the sample container. The entire contents are transferred to a weak anion exchange (WAX) solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Data quality objectives for internal standard recoveries are based on US EPA method 1633.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2517036**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_25	Page	: 1 of 3
Order number	: 60676801/4.02	Quote number	: ES2019AECOMAU0030 (SY/139/19 V3)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Tindal Biannual GME - MW815 Resample		
Sampler	: CM		

Dates

Date Samples Received	: 11-Jun-2025 11:30	Issue Date	: 11-Jun-2025
Client Requested Due Date	: 12-Jun-2025	Scheduled Reporting Date	: **12-Jun-2025**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: 23.6'C 24.6'C 25.1'C
Receipt Detail	:	No. of samples received / analysed	: 5 / 3

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **QC Forward analysis will be conducted by NMI.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	(On Hold) WATER No analysis requested	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2517036-001	06-Jun-2025 00:00	0990_MW815_250606		✓
ES2517036-002	06-Jun-2025 00:00	0990_QC100_250606		✓
ES2517036-003	06-Jun-2025 00:00	0990_QC300_250606		✓
ES2517036-004	06-Jun-2025 00:00	0990_QC400_250606	✓	
ES2517036-005	06-Jun-2025 00:00	0990_QC500_250606	✓	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

DERP ESDAT REPORTS

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

ESDAT+AECOM-DERP

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2517036**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	:	Telephone	:
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 11-Jun-2025 11:30
Order number	: 60676801/4.02	Date Analysis Commenced	: 11-Jun-2025
C-O-C number	: ----	Issue Date	: 12-Jun-2025 17:24
Sampler	: CM		
Site	: Tindal Biannual GME - MW815 Resample		
Quote number	: SY/139/19 V3		
No. of samples received	: 5		
No. of samples analysed	: 3		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Organic Chemist	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW815_250606	0990_QC100_250606	0990_QC300_250606	----	----
			Sampling date / time	06-Jun-2025 00:00	06-Jun-2025 00:00	06-Jun-2025 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2517036-001	ES2517036-002	ES2517036-003	--------	--------
				Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.09**	**0.09**	<0.01	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.14**	**0.13**	<0.01	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW815_250606	0990_QC100_250606	0990_QC300_250606	----	----
			Sampling date / time	06-Jun-2025 00:00	06-Jun-2025 00:00	06-Jun-2025 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2517036-001	ES2517036-002	ES2517036-003	--------	--------
				Result	Result	Result	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.23**	**0.22**	<0.01	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.23**	**0.22**	<0.01	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.23**	**0.22**	<0.01	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**96.1**	**101**	**96.2**	----	----
13C8-PFOA	----	0.02	%	**98.9**	**98.2**	**97.4**	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2517036**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: GPO BOX 3175 DARWIN NT, AUSTRALIA 0801	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 11-Jun-2025
Order number	: 60676801/4.02	Date Analysis Commenced	: 11-Jun-2025
C-O-C number	: ----	Issue Date	: 12-Jun-2025
Sampler	: CM		
Site	: Tindal Biannual GME - MW815 Resample		
Quote number	: SY/139/19 V3		
No. of samples received	: 5		
No. of samples analysed	: 3		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	Organic Chemist	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6641586)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	87.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	104	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	98.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	98.9	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	95.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	76.2	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6641586)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	100	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	91.7	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	96.7	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	93.5	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	100	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	98.7	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	89.1	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	99.2	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	88.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	98.8	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6641586)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	99.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	113	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	109	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	121	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	116	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	98.3	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	103	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6641586)								

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6641586) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	111	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	98.2	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	108	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	95.1	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2517036**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 11-Jun-2025
Site	: Tindal Biannual GME - MW815 Resample	Issue Date	: 12-Jun-2025
Sampler	: CM	No. of samples received	: 5
Order number	: 60676801/4.02	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X) 0990_MW815_250606, 0990_QC300_250606	0990_QC100_250606,	**06-Jun-2025**	**11-Jun-2025**	03-Dec-2025	✓	**12-Jun-2025**	03-Dec-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X) 0990_MW815_250606, 0990_QC300_250606	0990_QC100_250606,	**06-Jun-2025**	**11-Jun-2025**	03-Dec-2025	✓	**12-Jun-2025**	03-Dec-2025	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X) 0990_MW815_250606, 0990_QC300_250606	0990_QC100_250606,	**06-Jun-2025**	**11-Jun-2025**	03-Dec-2025	✓	**12-Jun-2025**	03-Dec-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X) 0990_MW815_250606, 0990_QC300_250606	0990_QC100_250606,	**06-Jun-2025**	**11-Jun-2025**	03-Dec-2025	✓	**12-Jun-2025**	03-Dec-2025	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X) 0990_MW815_250606, 0990_QC300_250606	0990_QC100_250606,	**06-Jun-2025**	**11-Jun-2025**	03-Dec-2025	✓	**12-Jun-2025**	03-Dec-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	3	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	3	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction (SPE) followed by negative mode LC-ESI-MS/MS using MRM and isotope dilution or internal standard quantitation. Isotope dilution standards (where commercially available) and surrogates are added to the sample container. The entire contents are transferred to a weak anion exchange (WAX) solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Data quality objectives for internal standard recoveries are based on US EPA method 1633.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2513387**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	:	Address	:
E-mail	:	E-mail	:
Telephone	: ----	Telephone	:
Facsimile	: ----	Facsimile	:
Project	: NT_0990_PFASOMP_25	Page	: 1 of 3
Order number	: 60676801/4.04	Quote number	: ES2019AECOMAU0030 (SY/139/19 V3)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [redacted]		

Dates

Date Samples Received	: 13-May-2025 10:30	Issue Date	: 20-May-2025
Client Requested Due Date	: 21-May-2025	Scheduled Reporting Date	: **21-May-2025**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 3.9'C 2.5'C 3.3'C - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 7 / 5

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- 15/05/2025 - This is an updated SRN which indicates the new scheduled release date for this work order.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **20/05/2025: This is an updated SRN indicating a change to sample ES2513387-002 and 003 IDs.**
- **Awaiting client confirmation on analysis schedule.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	(On Hold) WATER No analysis requested	WATER - EP231X-LL PFAS - Full Suite (31 analytes) Low Level
ES2513387-001	08-May-2025 00:00	0990_SW178_250508		✓
ES2513387-002	08-May-2025 00:00	0990_SW161_250508		✓
ES2513387-003	08-May-2025 00:00	0990_SW177_250508		✓
ES2513387-004	08-May-2025 00:00	0990_QC120_250508		✓
ES2513387-005	08-May-2025 00:00	0990_QC320_250508		✓
ES2513387-006	08-May-2025 00:00	0990_QC420_250508	✓	
ES2513387-007	08-May-2025 00:00	0990_QC520_250508	✓	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

DERP ESDAT REPORTS

- EDI Format - ESDAT (ESDAT) Email

ESDAT+AECOM-DERP

- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

- *AU Certificate of Analysis - NATA (COA) Email
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) Email
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) Email
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) Email
- Chain of Custody (CoC) (COC) Email
- EDI Format - ESDAT (ESDAT) Email

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2513387**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 13-May-2025 10:30
Order number	: 60676801/4.04	Date Analysis Commenced	: 16-May-2025
C-O-C number	: ----	Issue Date	: 20-May-2025 20:36
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3		
No. of samples received	: 7		
No. of samples analysed	: 5		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_SW178_250508	0990_SW161_250508	0990_SW177_250508	0990_QC120_250508	0990_QC320_250508
			Sampling date / time	08-May-2025 00:00	08-May-2025 00:00	08-May-2025 00:00	08-May-2025 00:00	08-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513387-001	ES2513387-002	ES2513387-003	ES2513387-004	ES2513387-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_SW178_250508	0990_SW161_250508	0990_SW177_250508	0990_QC120_250508	0990_QC320_250508
			Sampling date / time	08-May-2025 00:00	08-May-2025 00:00	08-May-2025 00:00	08-May-2025 00:00	08-May-2025 00:00
Compound	CAS Number	LOR	Unit	ES2513387-001	ES2513387-002	ES2513387-003	ES2513387-004	ES2513387-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Sum of PFAS (WA DER List)	----	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**94.3**	**97.0**	**98.8**	**99.0**	**99.8**
13C8-PFOA	----	0.002	%	**98.0**	**98.8**	**100.0**	**101**	**96.7**

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2513387**	Page	: 1 of 6
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Contact	[redacted]
Address	: GPO BOX 3175 DARWIN NT, AUSTRALIA 0801	Address	
Telephone	: ----	Telephone	
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 13-May-2025
Order number	: 60676801/4.04	Date Analysis Commenced	: 16-May-2025
C-O-C number	: ----	Issue Date	: 20-May-2025
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3		
No. of samples received	: 7		
No. of samples analysed	: 5		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6579102)									
ES2513941-001	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	0.004	0.004	0.0	No Limit
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	0.008	0.008	0.0	No Limit
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	0.011	0.014	18.2	No Limit
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6579102)									
ES2513941-001	Anonymous	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	0.009	0.008	0.0	No Limit
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	0.008	0.008	0.0	No Limit
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	0.003	0.003	0.0	No Limit
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	0.006	0.006	0.0	No Limit
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6579102) - continued									
ES2513941-001	Anonymous	EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6579102)									
ES2513941-001	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6579102)									
ES2513941-001	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6579102)								
EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	0.025 µg/L	85.6	72.0	130
EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	0.025 µg/L	93.0	71.0	127
EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	0.025 µg/L	82.4	68.0	131
EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	0.025 µg/L	99.1	69.0	134
EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	0.025 µg/L	88.7	65.0	140
EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	0.025 µg/L	85.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6579102)								
EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	0.125 µg/L	107	73.0	129
EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.025 µg/L	89.4	72.0	129
EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	0.025 µg/L	95.5	72.0	129
EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	0.025 µg/L	84.6	72.0	130
EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	0.025 µg/L	99.3	71.0	133
EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	0.025 µg/L	96.7	69.0	130
EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	0.025 µg/L	103	71.0	129
EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	0.025 µg/L	102	69.0	133
EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	0.025 µg/L	111	72.0	134
EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	0.025 µg/L	100	65.0	144
EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	0.0625 µg/L	102	71.0	132
EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	0.025 µg/L	100.0	65.6	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6579102)								
EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	0.025 µg/L	95.1	67.0	137
EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	0.0625 µg/L	96.8	68.0	141
EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	0.0625 µg/L	108	61.1	139
EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	0.0625 µg/L	98.1	72.3	128
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	0.0625 µg/L	108	63.2	134
EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	0.025 µg/L	95.1	65.0	136
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	0.025 µg/L	100	61.0	135

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6579102)								
EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	0.025 µg/L	89.6	63.0	143
EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	0.025 µg/L	83.9	64.0	140
EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	0.025 µg/L	98.7	67.0	138
EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	0.025 µg/L	103	75.2	137

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6579102)							
ES2513941-001	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.025 µg/L	93.5	72.0	130
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.025 µg/L	97.8	71.0	127
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.025 µg/L	96.3	68.0	131
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.025 µg/L	108	69.0	134
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.025 µg/L	95.4	65.0	140
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.025 µg/L	95.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6579102)							
ES2513941-001	Anonymous	EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.125 µg/L	112	73.0	129
		EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.025 µg/L	92.4	72.0	129
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.025 µg/L	106	72.0	129
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.025 µg/L	89.4	72.0	130
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.025 µg/L	107	71.0	133
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.025 µg/L	103	69.0	130
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.025 µg/L	104	71.0	129
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.025 µg/L	106	69.0	133
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.025 µg/L	117	72.0	134
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.025 µg/L	100	65.0	144
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0625 µg/L	102	71.0	132
		EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.025 µg/L	99.6	65.6	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6579102)							
ES2513941-001	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.025 µg/L	88.7	67.0	137
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0625 µg/L	110	68.0	141
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0625 µg/L	102	61.1	139

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6579102) - continued							
ES2513941-001	Anonymous	EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0625 µg/L	101	72.3	128
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0625 µg/L	103	63.2	134
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.025 µg/L	90.2	65.0	136
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.025 µg/L	105	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6579102)							
ES2513941-001	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.025 µg/L	88.1	63.0	143
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.025 µg/L	88.4	64.0	140
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.025 µg/L	106	67.0	138
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.025 µg/L	91.0	75.2	137

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2513387**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 13-May-2025
Site	: ----	Issue Date	: 20-May-2025
Sampler	: [redacted]	No. of samples received	: 7
Order number	: 60676801/4.04	No. of samples analysed	: 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	17	5.88	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
0990_SW178_250508, 0990_SW177_250508, 0990_QC320_250508	0990_SW161_250508, 0990_QC120_250508,	**08-May-2025**	**16-May-2025**	04-Nov-2025	✓	**20-May-2025**	04-Nov-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X-LL)								
0990_SW178_250508, 0990_SW177_250508, 0990_QC320_250508	0990_SW161_250508, 0990_QC120_250508,	**08-May-2025**	**16-May-2025**	04-Nov-2025	✓	**20-May-2025**	04-Nov-2025	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X-LL)								
0990_SW178_250508, 0990_SW177_250508, 0990_QC320_250508	0990_SW161_250508, 0990_QC120_250508,	**08-May-2025**	**16-May-2025**	04-Nov-2025	✓	**20-May-2025**	04-Nov-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
0990_SW178_250508, 0990_SW177_250508, 0990_QC320_250508	0990_SW161_250508, 0990_QC120_250508,	**08-May-2025**	**16-May-2025**	04-Nov-2025	✓	**20-May-2025**	04-Nov-2025	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X-LL)								
0990_SW178_250508, 0990_SW177_250508, 0990_QC320_250508	0990_SW161_250508, 0990_QC120_250508,	**08-May-2025**	**16-May-2025**	04-Nov-2025	✓	**20-May-2025**	04-Nov-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	17	**5.88**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	WATER	In-house: Analysis of fresh and saline waters by solid phase extraction (SPE) followed by negative mode LC-ESI-MS/MS using MRM and isotope dilution or internal standard quantitation. Isotope dilution standards (where commercially available) and surrogates are added to the sample container. The entire contents are transferred to a weak anion exchange (WAX) solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Data quality objectives for internal standard recoveries are based on US EPA method 1633.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

Prepared for
PFAS Investigation and Management Branch - Security and Estate Group - Infrastructure Division
ABN: 68 706 814 312

RAAF Base Tindal Sampling Analysis and Quality Plan

Per- and Poly-Fluoroalkyl Substances Ongoing Monitoring Plan

04-Jun-2025
PFAS Ongoing Monitoring Plan

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Per- and Poly-Fluoroalkyl Substances Ongoing Monitoring Plan

Client: PFAS Investigation and Management Branch - Security and Estate Group - Infrastructure Division

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Abbreviations

Abbreviation	Term
AECOM	AECOM Australia Pty Ltd
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure 1999
COC	Chain of Custody
CSM	Conceptual site model
DCAC	Defence Common Access Card
DCMM	Defence Contamination Management Manual
Defence	Department of Defence
DO	Dissolved oxygen
DoH	Department of Health
DQI	Data quality indicator
DQO	Data Quality Objective
EC	Electrical conductivity
FSANZ	Food Safety Australia and New Zealand
HEPA	Heads of Environment Protection Authority
LOR	Limit of reporting
NATA	National Association of Testing Authorities
NEPM	National Environmental Protection Measure
NHMC	National Health and Medical Research Council
OMP	Ongoing Monitoring Plan
OMR	Ongoing Monitoring Report
PFAS	Per- and poly-fluoroalkyl substances
PFAS NEMP	PFAS National Environmental Management Plan
PFHxS	Perfluorohexanesulfonic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
PMAP	PFAS Management Area Plan
QAQC	Quality assurance and quality control
RAAF	Royal Australian Air Force
RPD	Relative percentage difference
S&EG	Base, Security and Estate Group
SAQP	Sampling Analysis and Quality Plan
SOP	Standard Operating Procedure
TDI	Total Daily Intake

The base	Royal Australian Airforce Base Tindal
WSO	Work Safety Officer

1.0 Introduction

1.1 Preamble

The Department of Defence (Defence) engaged AECOM Australia Pty Ltd (AECOM) to prepare a Sampling Analysis and Quality Plan (SAQP) as part of the Ongoing Monitoring Program (OMP), the purpose of which is to monitor the nature and extent of per- and poly-fluoroalkyl substances (PFAS) identified on and around Royal Australian Air Force (RAAF) Base Tindal (the base), Northern Territory. These areas are collectively referred to as the 'Management Area' as shown on **Figure F1** (**Appendix A**).

1.2 OMP Purpose

The OMP sets out rationale and requirements for collection of data to identify and evaluate:

- spatial, and temporal (including seasonal) variability of PFAS in the environment
- changes to sources, transport pathways and/or receptors, described as a conceptual site model (CSM) for the base
- whether risks to human and ecological receptors require review
- the influence that risk management activities at the base, as outlined in the PFAS Management Area Plan (PMAP), have had on PFAS in the environment
- whether the identified changes trigger an action and/or review.

The data collected may be used to inform instances where new risk management actions may be required, or to support a determination that remediation has been completed so far as reasonably practicable.

1.3 Background

The original OMP was first implemented in late 2019 (Defence, 2019). The OMP was reviewed and was revised in 2021 (Defence, 2021a), this process was repeated in late 2024 (Defence, 2025), and subsequently finalised in 2025.

This SAQP has been developed to reflect the sampling requirements for an 18-month monitoring period (January 2025 – June 2026), in line with the purpose and objectives of the 2025 OMP.

1.4 SAQP Objectives

The objectives of this SAQP are to:

- describe the required scope of works in detail
- outline the required sampling methodology and procedures that are to be adopted
- outline the required quality assurance and quality control (QAQC) measures to be adopted
- define the data collection and management requirements for the program.

This will support the following OMP objectives:

- implement a program of surface water, groundwater and biota monitoring that will assess changes in risk associated with PFAS within the environment
- assess the seasonal effects of PFAS concentrations in surface water and groundwater.

2.0 Base Identification

2.1 Base Details

The base is operational and home to several squadrons. Base features include:

- shared domestic and Defence airfield and associated buildings and ancillary infrastructure
- residential housing and infrastructure
- surface drains and other water bodies both on-base and off-base
- range training areas and firefighting station.

The base is located approximately 15 kilometres outside of the Katherine township and approximately 320km south-east of Darwin (**Figure F1** in **Appendix A**). The Stuart Highway extends along the northern boundary of the base, pastoral lands surround the base to the north, east and west and the Cutta-Cutta Caves Nature Park is located to the south / south-east.

3.0 Scope of Works

3.1 Field Program

The scope of the field program has been summarised in **Table 1** below and the sampling schedule is provided **Appendix B**. The nominated locations are listed in **Section 5.0** and shown on **Figures F2** to **F5** (**Appendix A**).

Table 1 PFAS sampling – yearly OMP monitoring commitment

Sample matrix	No. of sample locations	Frequency	No. of monitoring events per year	Approximate monitoring period
Groundwater	18	Monthly during wet season and once in dry season	7	• Wet season (November–April) • Dry season (August)
	1	Annual	1	• Late dry season (September-October)
	50	Biannual	2	• Late wet season (March-April) • Late dry season (September-October)
Surface water	6	Twice in wet season	2	• Start of wet season (November-December) • End of wet season (March-April)
	1	Annual	1	• End of dry season (August-October)
	6	Biannual	2	• Late wet season (March-April) • Late dry season (September-October)
Biota	Multiple samples from 2 locations	Annual	1	• End of dry season (August-October)

4.0 Data Quality Assessment

4.1 Data Quality Objectives

National Environment Protection (Assessment of Site Contamination) Measure 2013 (ASC NEPM) (National Environment Protection Council (NEPC), 2013) specifies that the nature and quality of the data produced in an investigation will be determined by the Data Quality Objectives (DQOs). As referenced by the NEPM, the DQO process is detailed in the United States Environmental Protection Agency (US EPA) *Guidance on Systematic Planning Using the Data Quality Objectives Process (EPA QA/G-4), February 2006.*

The process of establishing appropriate DQOs is defined according to the following seven steps outlined in **Table 2**:

Table 2 The seven steps in defining DQOs

Step	Data quality objective step
1	***State the problem*** – Define the problem that necessitates the study; identify the planning team, examine budget, schedule.
2	***Identify the goal of the study*** – State how environmental data will be used in meeting objectives and solving the problem, identify study questions, define alternative outcomes.
3	***Identify information inputs*** – Identify data and information needed to answer study questions.
4	***Define the boundaries of the study*** – Specify the target population and characteristics of interest, define spatial and temporal limits, scale of inference.
5	***Develop the analytic approach*** – Define the parameter of interest, specify the type of inference, and develop the logic for drawing conclusions from findings.
6	***Specify performance or acceptance criteria*** – Develop performance criteria for new data being collected or acceptable criteria for existing data being considered for use.
7	***Develop the plan for obtaining data*** – Select the resource-effective sampling and analysis plan that meets the performance criteria.

The methodology presented in this SAQP presents a sampling plan which is designed to meet the objectives for the OMP and achieve the nominated DQOs. The approach to be adopted relative to the seven steps presented in **Table 2** is discussed in the following sections.

4.1.1 Step 1 – State the Problem

Storage, handling and use of Aqueous Film Forming Foam (AFFF) containing PFAS at the base has led to the contamination of soil, infrastructure, groundwater and surface water. PFAS has also been measured within biota collected from Tindal Creek and the Katherine River. Based on the data collected between April 2017 and May 2018, assessments of risk to human health and ecology were completed (Coffey, 2018a; Coffey, 2018b). Monitoring of the concentrations of PFAS in the environment is required to evaluate if the advice developed, based on previous data and risk assessments, remains relevant, appropriate and protective.

4.1.2 Step 2 – Identify the Goal of the Study

The overall goal of the study is to establish a systematic routine groundwater, surface water and biota sampling and analysis program to provide current and ongoing information on the distribution of PFAS contaminants of potential concern in groundwater, surface water and biota in the Management Area.

Specific goals of the program are to:

- understand the changes and trends in the nature, extent and magnitude of PFAS concentrations in the groundwater, surface water and biota within the Management Area
- understand if the nature, extent and magnitude of PFAS concentrations has changed significantly to warrant a revision to the human health and environmental risk assessments

- understand if the nature, extent and magnitude of PFAS concentrations have changed significantly to warrant refinement of any existing management measures.

4.1.3 Step 3 – Identify Information Inputs

To allow assessment of the data against the study goal listed in Step 2 above, the following inputs will be considered:

- PFAS results from previous environmental investigations
- meteorological data including rainfall
- previous and new data collected during the residential sampling program, where permission to use the data has been granted by landowners
- groundwater, surface water and biota data collected and analysed for PFAS
- groundwater elevation data
- statistical analysis to identify trends where sufficient data is available
- advances in laboratory analytical approaches and changes in regulatory requirements.

4.1.4 Step 4 – Define the Boundaries of the Study

The spatial and temporal boundaries that apply for data collection are detailed below and will influence the decision-making process for ongoing monitoring:

- the spatial boundary for data collection and decision making is limited to the Management Area shown on **Figure F1** (**Appendix A**), and select locations west of the Management Area boundary in Cossack
- the sampling completed as part of the OMP (Defence, 2025) will be limited to groundwater, surface water and biota at the frequencies defined in **Section 5.0**
- The monitoring will be ongoing.

4.1.5 Step 5 – Develop the Analytical Approach

The decision rules can be defined as:

- Analytical selection - all samples will be analysed for the extended (28 compounds) PFAS suite (Defence, 2022)
- Analytical method selection for PFAS is based on achieving appropriate laboratory limit of reporting (LOR) in the various media to be analysed as defined in the OMP (Defence, 2025)
- Sample locations have been selected with the objective of monitoring PFAS trends (temporal and seasonal), providing early warning of changes in the migration of PFAS in surface water, groundwater and biota
- If the laboratory quality assurance/quality control data are within the acceptable ranges, the data will be considered suitable for use
- If PFAS concentrations are reported above the laboratory LOR, where it was previously <LOR, then it will be considered whether further assessment of the data will be required
- If the PFAS is reported at a concentration that is above the selected criteria for surface water or groundwater where it was not previously, then further assessment will be required and/or notification
- If the PFAS is reported at a concentration that is inside a trigger value or acceptable range, then it will be considered whether monitoring is continued or reduced, this assessment was undertaken after four years of monitoring and is reflected in the 2025 OMP update (Defence, 2025).

The decision on the acceptance of the analytical data should be made on the basis of the Data Quality Indicators (DQIs) as follows:

- **Precision:** A quantitative measure of the variability (or reproducibility) of data
- **Accuracy**: A quantitative measure of the closeness of reported data to the "true" value
- **Representativeness**: The confidence (expressed qualitatively) that data are representative of each media sampled
- **Completeness**: A measure of the amount of useable data from a data collection activity
- **Comparability**: The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event.

4.1.6 Step 6 – Specify Performance or Acceptance Criteria

Specific limits for the works included in the OMP (Defence, 2025) are in accordance with the appropriate guidance made or endorsed by state and national regulations, appropriate indicators of data quality, and standard procedures for field sampling and handling.

This step also examines the certainty of conclusive statements based on the available new data collected. This should include the following points to quantify tolerable limits:

- A decision can be made based on a certainty assumption of 95% confidence in any given data set. A limit on the decision error will be 5% that a conclusive statement may be a false positive or false negative
- A decision error in the context of the decision rule presented above would lead to either underestimation or overestimation of the risk level associated with a particular sampling area
- Sampling errors may occur when the sampling program does not adequately detect the variability of a contaminant from point to point across the Management Area. To address this alternate locations or additional sampling events may be conducted.

  There may be limitations in the data if aspects of the OMP (Defence, 2025) cannot be implemented, such as:

  - surface water sample locations may be dry at the time of sampling
  - groundwater sampling locations are blocked, damaged or destroyed and therefore cannot be sampled
  - groundwater sampling locations may be dry at the time of sampling during the late dry season sampling event
  - target specific biota species may not be able to be caught
  - access to some sampling locations could be restricted due to operational activities or inaccessible due to unsafe conditions.

  There may be limitations in the ability to acquire useful and representative data from some sampling locations, for example private landholders' bores often have dedicated pumps in which may prevent groundwater being sampled from the same section of the formation as has occurred in monitoring bores.
- Measurement errors can occur during sample collection, handling, preparation, analysis and data reduction. To address this, the following measures will be adopted:
  - Appropriately qualified samplers are utilised for non-traditional sampling, such as biota sampling
  - Collection of sufficient sample mass to facilitate analysis reported to standard laboratory detections limits, or lower detection limits if requested or required. Collection of insufficient sample mass may result in raised detection limits

- Field staff to follow a standard procedure when collecting samples, including decontamination of tools, and use of appropriate sample containers and preservation methods
- Laboratories to follow a standard procedure when preparing samples for analysis and undertaking analysis
- Laboratories to report quality assurance/quality control data for comparison with the DQIs established for the SAQP.

4.1.7 Step 7 – Optimise the Design for Obtaining Data

The methodology presented in this SAQP is designed to meet the objectives specified in **Section 1.4** (above) and to achieve the nominated DQOs. Optimisation of the data collection process will be achieved by:

- Working closely with the analytical laboratories and sampling equipment suppliers to ensure that appropriate procedures and processes are developed and implemented prior to and during the fieldwork, to ensure that sample handling, and transport to and processing by the analytical laboratories is appropriate
- Conducting sampling according to Defence and Australian Standards for the type of sampling being conducted (i.e. groundwater monitoring well sampling versus landholder bore water sampling). These standards are as follows:
  - Defence *Contamination Management Manual (DCMM)* (Defence, 2021b)
  - Standards Australia (AS/NZS5667.11–1998) Water Quality – Sampling, part 11: *Guidance on sampling of groundwater* (AS, 1998)
- Conducting sampling in accordance with the NEMP (2025) and AECOM's internal PFAS Sample Collection Guidance
- Sampling conducted by suitably qualified and experienced field staff
- Basing the sampling upon a CSM developed using the information available at the implementation of the SAQP. Updating the CSM as new data becomes available in the course of the implementation of the SAQP, as required
- Progressive review of the data throughout the OMP period and modification of sampling programs to optimise the value of data generated.

If the objectives of the SAQP are not being met, the sampling design and approach will be reviewed and amended, as required.

4.2 Assessment of Data Quality

The quality of data collected as part of the sampling will be assessed on a range of factors including:

- documentation and data completeness
- data quality – comparability, representativeness, precision and accuracy of the analytical data.

The project target for data completeness is to achieve 95% of data as suitable for use. The acceptance criteria for DQIs for samples are specified in **Table 3** (below).

Table 3 Acceptance criteria for data quality indicators for sample analysis

Data quality indicators	Acceptance criteria
Field intra- and inter-laboratory duplicates	The relative percentage differences (RPDs) will be assessed as acceptable if less than or equal to 30% as per the NEPM (National Environment Protection Council (NEPC), 2013) Schedule B3. Where the results show greater than 30% difference a review of the cause will be conducted. It is noted that RPDs that exceed this range may be considered acceptable where: • results are less than 10 times the LOR (no limit) • results are less than 20 times the LOR and the RPD is less than 50% • heterogeneous materials are encountered.
Rinsate blanks - where decontaminated sampling equipment is used	Less than the laboratory LOR.
Field blanks	Less than the laboratory LOR.
Trip blanks	Less than the laboratory LOR.
Laboratory duplicates	RPDs less than: • 20% for high level laboratory duplicates (i.e. >20 x LOR) • 50% for medium level laboratory duplicates (i.e. 10 to 20 x LOR).
Laboratory matrix spikes	Recoveries between 70-130% of the theoretical recovery or as nominated in the laboratory's QC report, based on their historical database.
Laboratory method blanks	Less than the laboratory LOR.
Laboratory control samples	Recoveries between laboratories specified range for each analyte / analytical suite.

5.0 Methodology

5.1 Guidance Documents

In developing the OMP (Defence, 2025) and this SAQP, reference has been made to the PFAS National Environmental Management Plan (PFAS NEMP[(HEPA, 2025)], the National Environment Protection (Assessment of Site Contamination) Measure 2013 (ASC NEPM) (National Environment Protection Council (NEPC), 2013) and Defence estate, environmental and PFAS-specific strategies and guidance, and other information as provided in the references section of this document (**Section 9.0**).

Guidance provided in the following sections will be adopted during the sampling program:

- National Chemicals Working Group of the Heads of EPAs Australia and New Zealand (HEPA) (2025), PFAS National Environmental Management Plan – Version 3.0 (HEPA, 2025)
- National Environment Protection Council, National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended in May 2013) [ASC NEPM] Schedule B2: Guideline on Site Characterisation (National Environment Protection Council (NEPC), 2013).

An overview of the analytical schedule, sampling scope and methodology is provided in the following sections.

5.2 Access Requirements for Sampling on Base

A range of access requirements exist to gain access to the appropriate areas for the collection of groundwater and surface water samples. Initiating contact with the base no less than two weeks prior to sampling is necessary to ensure all access requirements are satisfied and approved by base management.

To gain access to base each field team member must obtain baseline clearance from Defence and receive a Defence Common Access Card (DCAC), which allows unescorted entry to the base. Field team members without baseline clearance and DCAC's will need to be escorted by a field team member that has escort authority associated with their DCAC or have arranged an escort prior to sampling.

To conduct works on the base, Security & Estate Group (S&EG), the contracted base Manager (S&EG), must be contacted to inform them of the intended works and to gain permission prior to carrying those out. As well as grant permission to conduct works, S&EG will alert the dedicated field team of any conflicting works on base. Photo permits must be obtained from S&EG upon arrival at the base, no photos are to be taken before this is done.

If sample locations occur in a construction site, the field team will need to get permission from the construction project manager to access the site. Any internal inductions for the site will also need to be completed by the team upon the project manager's request.

2nd Security Forces RAAF (2SECFOR) is the base security service and will need to be made aware of the works to be carried out and the locations that sampling will occur in.

To gain access to the airside locations a Work Safety Officer (WSO) will need to be contacted and present for the duration of airside activities. Field team members entering airside locations will need to ensure they complete airside awareness training – this can be organised by enquiring with the S&EG.

For sampling locations in the ordnance area, Defence contractor Thales, will need to be contacted to arrange entry, and 2SECFOR alerted to the fact that the team has intentions to enter the area.

5.3 Access Requirements for Sampling off Base

Samples are collected from three primary property types outside of the base boundary:

- Private property
- Publicly accessible Commonwealth or NT Government properties such as within roadway easements

- Other non-private or business properties that include:
  - Katherine Town Council Properties
  - Katherine Research Station
  - Power and Water Corporation

Access to private properties or other none publicly accessible locations requires access approval to collect samples from within those property types. Access approval and communications procedures are outlined in Stakeholder and Community Engagement Plan – RAAF Base Tindal (AECOM, 2025).

5.4 Groundwater Sampling

5.4.1 Groundwater Sampling Methodology

The groundwater sampling methodology to be adopted is presented in **Table 4**.

Table 4 Groundwater sampling methodology and schedule

Item	Details
Groundwater gauging	The depth to groundwater will be measured from groundwater monitoring wells prior to collection of groundwater samples. Gauging shall be completed within 24-hour period to industry standards (or as close to 24-hour period as possible).
Sample collection methodology	**Groundwater Monitoring Wells** Groundwater samples will be collected from monitoring wells using a no purge methodology with HydraSleeves™ which will be installed with the top of the HydraSleeve™ collar approximately three-metres below standing water level (SWL) or one-metre below the top of the screened section (whichever is deepest) for a minimum of 24-hours prior to sampling. Well construction details are presented in **Appendix C**. Field parameters will be recorded ex-situ within a sealed water quality metre cup utilising remaining HydraSleeve™ volume. **Groundwater Extraction Bores** Bore water samples will be collected from existing sample ports or taps on the headworks of the extraction bore as a “first flush” sample without pre-purging. The flow of the water will be reduced to a low-flow rate to provide a steady flow and minimise aeration of the water sample. Following sample collection, field parameters will be recorded ex-situ. Bore construction details are obtained from a “Water-Use Survey”, where available, from the property owner.
QAQC samples to be collected	Field QAQC samples are to include: • 1 x intra-laboratory duplicate per 10 primary samples • 1 x interlaboratory duplicate per 10 primary samples • 1 x rinsate blank / sampling day / when re-usable sampling equipment is utilised • 1 x field blank / sampling day (to be analysed if rinsate sample result is above the LOR*) • 1 x trip blank / cooler (to be analysed if rinsate sample result is above the LOR*) Additional sample volume is required to be collected to enable the appropriate laboratory QAQC. For every 10 primary samples an additional set of samples are required for laboratory duplicates and matrix spikes (to be labelled as primary

Item	Details	
	sample ID). Locations where additional sample volume is collected are to be noted on the chain of custody (COC) form that extra volume is provided for laboratory QAQC.	
Field parameters	Temperature, electrical conductivity (EC), dissolved oxygen (DO), redox (oxidation-reduction potential), pH and observations of water quality will be recorded for all samples.	
Sample analysis	All samples will be submitted for PFAS extended suite (Defence, 2022) using the standard levels of detection for all groundwater samples with the exception of low-level analysis for select 'monthly in wet season and once in dry season' groundwater locations. The 'monthly in wet season and once in dry season' groundwater locations are extraction bores located on private properties within Cossack, a suburb of Katherine. Water-usage from these extraction bores range from irrigation of crops, water supply for animals, used to filled private swimming pools and/or used for household potable use. Low-level analysis has been chosen for properties where results consistently report below the limit of reporting (<0.01 micrograms per litre [µg/L]) to be able to detect and monitor trace concentrations of PFAS.	
Minimum sampling volumes	PFAS bottle (white – unpreserved, HDPE-free)	2 x 20mL

* LOR selected for QC samples will be based on LOR selected for primary samples as identified in the OMP (Defence, 2025).

5.4.2 Groundwater Monitoring Locations

Groundwater monitoring locations are listed below in their respective sampling frequency groups. Annual locations are presented in **Table 5**, Monthly in Wet Season and Once in Dry Season locations are presented in **Table 6**, with Biannual locations in **Table 7**.

Table 5 Annual groundwater monitoring location (Appendix A – Figure F2)

Description	Sampling location	No. of primary samples
On-base		
Northern boundary	MW301	1
	Total	**1**

Table 6 Monthly in wet season and once in dry season groundwater monitoring locations (Appendix A – Figure F3)

Description	Sampling location	No. of primary samples
Off-base – Cossack		
Shadforth Road	POT114[1], OTH117[1], POT120, POT124, POT130	5
Zimin Drive	POT121[1], POT112, POT113, POT125, POT126, POT127, POT128, OTH118, OTH119[1], POT129, POT131	11
Tokmakoff Road	POT198[1], POT201	2
	Total	**18**

[1]Private property locations not shown on **Appendix A – Figure F3** due to privacy reasons

Table 7 Biannual groundwater monitoring locations (Appendix A – Figure F2 and F3)

Description	Sampling location	No. of primary samples
On-base		
Former Fire Training Area	MW104, MW231, MW803D, MW803I, MW803S	5
Fire Station Area (FSA)	MW127, MW129, MW146, MW149, MW802D, MW802I, MW802S	7
Fuel Farm 1	MW278	1
Fuel Farm 2	MW285	1
Former Mechanical Equipment Operations Maintenance Section	MW244	1
Married Quarters	OTH111	1
75 Squadron	OTH112	1
Central Transect	MW106, MW107, MW109S, MW109D, MW110, MW111D, MW111S, MW134, MW135, MW403, MW801S	11
Western boundary transect	MW117, MW118D, MW118I, MW118S, MW119, MW130, MW131	4
Northern boundary transect	MW133	1
Off-base		
Katherine Research Station	MW134, MW135	2
Katherine East	MW137, MW138, MW140	3
Uralla	MW400, POT111	2
Adjacent to Katherine River	MW142, MW144, MW815	3
Lansdowne	MW136, OTH115	2
West of Katherine River	MW814, OTH120	2
Katherine Town Council	OTH113, OTH114	2
	Total	**50**

5.5 Surface Water Sampling

5.5.1 Surface Water Sampling Methodology

The surface water sampling methodology and schedule to be adopted are presented in **Table 8**.

Table 8 Surface water sampling methodology and schedule

Item	Details
Sample collection methodology	Samples are to be collected using a ‘grab’ manual sample, via new nitrile gloved hand or using a decontaminated telescoping sampling pole with laboratory supplied bottle on the end if sample location is from Katherine River. Sample depth is to be approximately 0.1 m below the surface (if possible), with care to minimise collection of sediment or floating materials in the samples. At each location, a new, laboratory supplied container should be lowered into the water using a sampling pole or nitrile gloved hand, with the cap immediately applied once the container is full.

Item	Details	
	Following sample collection, field parameters will be recorded in-situ by placing the water-meter probe in the surface water collection location.	
QAQC samples to be collected	Field QAQC samples are to include: • 1 x intra-laboratory duplicate per 10 primary samples • 1 x interlaboratory duplicate per 10 primary samples • 1 x rinsate blank / sampling day / re-usable sampling equipment • 1 x field blank / sampling day • 1 x trip blank / cooler Additional sample volume is required to be collected to enable the appropriate laboratory QAQC. For every 10 primary samples an additional set of samples are required for laboratory duplicates and matrix spikes (to be labelled as primary sample ID). Locations where additional sample volume is collected are to be noted on the chain of custody (COC) form that extra volume is provided for laboratory QAQC.	
Field parameters	Temperature, EC, DO, redox, pH and observations of water quality will be recorded for all samples, including flow observations (no, low, moderate or high flow)	
Sample analysis	All primary samples will be submitted for PFAS extended suite (Defence, 2022) using the standard levels of detection.	
Minimum sampling volumes	PFAS bottle (white – unpreserved, HDPE-free)	2 x 20mL

5.5.2 Surface Water Monitoring Locations

Surface water monitoring locations are listed below in their respective sampling frequency groups. Annual locations are presented in **Table 9**, Twice in Wet Season locations are presented in **Table 10**, with Biannual locations in **Table 11**.

Table 9 Annual surface water locations (Appendix A – Figure F4)

Sampling location	Number of locations	No. of primary samples
Off-base		
Katherine River	SW151*	1
	Total	**1**

*Collection of SW151 be collected by EcoLogical Australia during biota sampling of monitoring area BIO078 due to ease of access.

Table 10 Twice in wet season surface water sampling locations (Appendix A – Figure F4)

Sampling location	Number of locations	No. of primary samples
On-base		
Tindal Creek	SW016, SW350	2
FSA – Taxiway drain	SW188, SW049	2
Drain off Fire Station handstand	SW140	1
Off-base		
Tindal Creek – Stuart Hwy	SW021	1
	Total	**6**

Table 11 Biannual surface water sampling locations (Appendix A – Figure F4)

Sampling location	Number of locations	No. of primary samples
Off-base		
Katherine River	SW100, SW108, SW110, SW161,	4
Katherine Hot Springs	SW153	1
YMCA Pool	OTH008	1
	Total	**1**

5.6 Biota Sampling

In addition to collection of groundwater and surface water samples, aquatic biota (fish and aquatic invertebrates) sampling will occur to supplement existing datasets and support any future reviews of human exposure risk to ingestion of biota containing PFAS.

The Northern Territory Department of Health have issued guidance for the consumption of fish and aquatic species in the Katherine River. Monitoring of PFAS concentrations within fish within the Katherine River is to be undertaken to ensure that the health guidance provided is appropriate and continues to be relevant.

Ethics approvals and Fisheries/Parks & Wildlife licences will be obtained prior to biota sample collection.

5.6.1 Biota Sampling Methodology

The biota sampling methodology and schedule are presented in Table 12.

Table 12 Biota sampling methodology and schedule

Item	Details
Sample collection methodology	Targeted and opportunistic catch fish and aquatic invertebrates will be collected using an electrofishing boat, using methods that comply with the guidelines set out by the Australian Code of Electrofishing Practice. Stunning will use the minimum power necessary to attract and stun the biota effectively. Gill nets and, rod and reel may also be used to acquire samples. Electrofishing will occur for 5 – 10 minutes per pool, or until adequate samples have been collected. Selected biota will be identified, measured, weighed and euthanized humanely according to the animal ethics permit conditions, and all non-target species or opportunistic catch species will be released from electrical current immediately. Samples will be prepared based on the following procedure: • decontaminate equipment with PFAS-free DI water and PFAS-free detergent (Liquinox), followed by rinsing with PFAS free DI water • store samples in snap-lock bags until preparation • weigh, measure and record species and location caught • use opened bag as board cover • clean knife/blade with DI water • collect 50 – 100 g samples per sample collection bag for each species following lab specifications for total number of samples per species • for large fish the complete tissue samples of edible flesh should be collected. Samples from large fish should not be composited if possible

Item	Details
	• for smaller fish, samples need to be provided whole with entrails removed. Head and tail can be removed from smaller fish where necessary for placing in bags • for cherabin composite whole to ensure 50 – 100 g per sample collection bag • tissue from the same species caught in the same area may be composited as a single sample if individuals do not meet 50g minimum • collect rinsate sample after cleaning non-dedicated equipment (run DI water over decontaminated equipment and collect in PFAS sample bottle)
QAQC samples to be collected	Quality control samples in the form of rinsate blanks will be collected from the sampling and processing equipment from each of the sampling areas to understand if there is the potential for cross contamination from the materials being used in sampling. Intra- and inter-laboratory duplicate samples will be collected from large fish across different species, if available, at a rate of one duplicate sample for every ten fish sampled. Intra- and inter-laboratory duplicate samples will be collected only from fish where a primary complete sample can be taken from one fillet side, and the duplicate sample can be collected from the opposite fillet side.
Sample analysis	Samples will be prepared for analysis by EcoLogical at the Department of Fisheries (NT) laboratory prior to dispatching to the primary laboratory. AECOM personnel will prepare samples under direction of Eco Logical, when required. This will include removal of scales/shell, head and internal organs. Fillets will be taken with skin intact and homogenised prior to sub-sampling and analysis. All whole and composited samples selected for analysis will be tested for the extended suite of PFAS (Defence, 2022).

5.6.2 Biota Sampling Locations

The two suitable primary locations identified for sample collection are shown on **Figure F5** (**Appendix A**):

- Galloping Jacks boat ramp: Location code BIO078 (approximately 19 km downstream from Stuart Highway)
- Stuart Highway boat ramp: Location code BIO088.

Target species will be based on those that are recognised as frequently consumed, and from the following five groups presented in **Table 13**.

Table 13 Aquatic biota target samples

Location	Sample area location code[1]	Indicator / Target species	Relevant opportunistic catch[2]	Target sample numbers
Galloping Jacks	BIO078	Barramundi (*Lates calcarifer*) Bony Bream (*Nematalosa erebi*) Mullet (*Planiliza ordensis*) Cherabin (*Macrobrachium spinipes*)	Sleepy Cod (Oxyeleotris lineolate) Sooty Grunter (*Hephaestus fuligninosus*) Black or Blue Catfish (*Neosilurus ater, Neoarisu graeffei*) Butlers Grunter (*Syncomistes buteri*)	Collect 50 – 100 g samples per sample collection bag for each species following lab specifications for total number of samples per species.
Down stream – Stuart Highway	BIO088			

Location	Sample area location code[1]	Indicator / Target species	Relevant opportunistic catch[2]	Target sample numbers
			Barred Grunter (*Amniataba percoides*)	

[1]Biota monitoring location IDs in the OMP (Department of Defence, 2021) were created prior to 2019 and therefore are considered an acceptable deviation from the DCMM, Annex L guidance (Department of Defence, 2021b).
[2]Species not required for sample collection but should be collected and sampled if present during aquatic biota sampling events.

The number of samples collected will vary based on what is caught, however a target of at least three of each indicator species will be aimed for from each location.

6.0 Adopted Screening Criteria

PFAS screening values have been adopted for groundwater and surface water from the Defence OMP (Defence, 2025) and are derived from the following documents:

- HEPA, 2025. PFAS National Environmental Management Plan (PFAS NEMP 3.0) (HEPA, 2025)
- Department of Health (DoH), 2019. Health Based Guidance Values for PFAS for use in investigations in Australia. September 2019 (DoH, 2019)
- National Health and Medical Research Council (NHMRC), 2019. Guidance on PFAS in Recreational Water. August 2019 (NHMRC, 2019)
- National Environment Protection (Assessment of Site Contamination) Measure 2013 (ASC NEPM) (National Environment Protection Council (NEPC), 2013)

Adopted PFAS screening values are provided in the **Table 14** and **Table** 15.

Table 14 Adopted Human Health Screening Criteria for Water

Pathway	Compound	Criteria	Comment / Reference
Drinking water	Sum of Perfluorooctanesulfonic acid and Perfluorohexanesulfonic acid (PFOS + PFHxS)	0.07 µg/L	The values presented in the PFAS NEMP 3.0, 2025 are from DoH 2017, which published final health-based guidance values for PFAS for use in site investigations in Australia. DoH utilised the total daily intake (TDI) for PFOS and PFOA from Food Safety Australia and New Zealand (FSANZ, 2017) and the methodology described in Chapter 6.3.3 of the National Health and Medical Research Council's (NHMRC) Australian Drinking Water Guidelines (ADWG), 2016 to determine drinking water values. For PFHxS, DoH 2017 noted that '*FSANZ concluded that there was not enough toxicological and epidemiological information to justify establishing a tolerable daily intake. However, as a precaution, and for the purposes of site investigations, the PFOS tolerable daily intake should apply to PFHxS. In practice, this means that the level of PFHxS exposure should be added to the level of PFOS exposure; and this combined level be compared to the tolerable daily intake for PFOS*'. *All groundwater and surface water results will be compared to these criteria.*
	Perfluorooctanoic acid (PFOA)	0.56 µg/L	
Recreational use	PFOS + PFHxS	2 µg/L	The values presented in the PFAS NEMP 3.0, 2025 are from the NHMRC guidance on the assessment of PFAS in surface water released in August 2019. Rather than adopting an ingestion rate of 0.2 L of water per day (as per the ADWG formula), NHMRC adjusted this rate with consideration of an event frequency (150 events / year) to calculate an annual ingestion rate of 30 L per year. *All groundwater and surface water results will be compared to these criteria.*
	PFOA	10 µg/L	

Table 15 Adopted Ecological Health Screening Criteria for Water

Pathway	Chemical	Criteria	Comment / Reference
Freshwater	PFOS	0.00023 µg/L	HEPA (2025) NEMP 3.0 99% species protection *All groundwater and surface water results will be compared to these criteria.*
	PFOA	19 µg/L	

Note: HEPA (2025) notes that the 99% species protection level for PFOS is close to the level of detection. Agencies may wish to apply a 'detect' threshold in such circumstances rather than a quantified measurement.

Table 16 Adopted Human Health Screening Criteria for Biota

Pathway	Compound	Criteria	Comment / Reference
Intake – food (Crustaceans)	PFOS+PFHxS	65 micrograms per kilogram (µg/kg)	The values are from the Department of Health, 2019. *All biota samples will be compared to these criteria.*
	PFOA	520 µg/kg	
Intake – food (Finfish)	PFOS+PFHxS	5.2 µg/kg	
	PFOA	41 µg/kg	

7.0 Quality Assurance Quality Control

A Quality Assurance/Quality Control (QA/QC) program is to be developed to facilitate collection of data that are sufficiently representative for the purposes of the OMP. The objective of the QA/QC program is to provide an assessment of the reliability of the data presented for interpretation in terms of the DQOs (refer **Section 4.1**).

All stages of the works (i.e. data gathering, sample handling, laboratory analysis) are to be conducted in accordance with the QAQC program outlined in the following sections.

7.1 Summary of QAQC Program

The objective of the QAQC program is to provide an assessment of the reliability of the data presented for interpretation. All work completed will be conducted in accordance with AECOM standard operating procedure (SOP) and DCMM (Annex L) (Defence, 2021b) as presented in **Table 17** below. Further detail regarding field methodologies to be adopted is provided in

Table 17 Essential elements of the field QAQC program

Aspect	Description
Use of experienced personnel	Field work is to be undertaken by trained personnel with previous experience in contaminated site assessment. Field personnel will be familiar with: • Identification of potential contamination sources • Field sampling techniques • Appropriate organisational and site-specific health and safety protocols.
Record keeping	Date, field personnel details, observations and findings of field activities including (but not limited to) recording of sample description and collection details on standard field sheets.
Sample collection	Samples are to be collected with reference to: • Applicable industry guidelines, and • DCMM (Annex L) and Defence ESdat requirements.
Quality control sampling	Quality control field samples are to be collected at a rate as listed in the respective matrix methodologies, Sections 5.4.1 (groundwater), 5.5.1 (surface water) and 5.6.1 (biota).
Sample labelling	The DCMM (Annex L) and Defence ESdat naming convention must be adhered to as a standardised naming convention for environmental sampling and will be used for each sample. A unique sample identification number is to be used for each sample to specify the sample origin (0990_MWXXX_YYMMDD), preservation standards and analytical requirements.
Chain of custody	Standard AECOM Chain of Custody (COC) procedures are to be adopted for sample transfers. CoC documentation includes sample numbers, date of sampling/ collection, analyses required, and release and receipt of parties accepting sample custody. In the event that additional samples are collected during the field investigations due to observations made by the field team, (i.e., samples not proposed in this SAQP), Defence will be provided the rationale for collection of those samples and proposed laboratory analyses. Defence approval will be sought to include these samples on the COC and to dispatch these samples to the laboratory.
Sample storage	Samples are to be collected in appropriate sample containers supplied by the analytical laboratory. Following collection, the samples will be stored in eskies while on-site and enroute to the primary and secondary laboratories.

Aspect	Description
Equipment decontamination	To avoid cross-contamination between samples and sample locations, all reusable sampling equipment, such as interface probe and sampling pole, will be de-contaminated between locations. The proposed method of decontamination is summarised below: • preliminary wash and scrub with tap water, after each sampling location • wash using Liquinox • rinsed with deionised water (supplied by the laboratory). Clean, disposable nitrile gloves will be worn and replaced between each sample.

7.2 Laboratory Data Validation

Laboratory data validation is the process of assessing if data are in compliance with laboratory method requirements and SAQP specifications. The primary objectives of this process are to obtain data of known quality, and to identify if the data can be used to fulfil the overall project objectives.

Only laboratories that have National Association of Testing Authorities (NATA) accreditation to measure the requested analyte concentrations in the supplied media will be utilised.

Where sample analysis is undertaken, specific elements of data validation that will be checked and assessed are:

- preservation and storage of samples upon collection and during transport to the laboratory
- sample holding times
- required limits of reporting
- frequency of conducting quality control measurements
- laboratory blanks
- laboratory control samples
- matrix spike/matrix spike duplicates
- surrogates, and
- the occurrence of apparently unusual or anomalous results (e.g. laboratory results that appear to be inconsistent with field observations or measurements).

7.3 Corrective Actions

Analytical data that fail to meet the predetermined DQIs and acceptable limits of accuracy and precision will be managed using the following corrective actions on a case-by-case basis:

- reanalyse suspect samples, provided sample or extract is within holding time
- evaluate and amend sampling and/or analytical procedures
- resampling and reanalysis
- accept the data as an estimate with an acknowledged level of bias and imprecision.

In the event that data of questionable reliability are used, restrictions and limitations associated with the use of such data will be clearly identified. Failure to meet the DQIs will be reported, and the significance to the outcomes of the work scope will be assessed.

8.0 Reporting

8.1.1 Sampling Event Report

Sampling event reports will be prepared covering the following sampling periods:

- Dry season (August – October)
- Early wet season (November – January)
- Late wet season (February – March).

No later than four weeks following the receipt of the laboratory results from the final sampling event per sample period, AECOM will prepare and submit a Sampling Event Report to Defence. A sampling event is defined as all sampling activities occurring in association with a PMAP (Defence, 2025) defined season, which can include groundwater, surface water, and / or biota sampling occurring at different times throughout a specified season as is appropriate for each sampling type. Each Sampling Event Report will be completed in accordance with Defence's Ongoing Monitoring Program Reporting Guidance document (Defence, 2024).

8.1.2 Ongoing Monitoring Report

At the end of each 12-month monitoring period, AECOM will prepare and submit an Ongoing Monitoring Report (OMR). The objective of the OMR is to assess and interpret the PFAS data and other information collected as part of the OMP for the base, including the data collected as part of this SAQP. Each OMR will be completed in accordance with Defence's Ongoing Monitoring Program Reporting Guidance document (Defence, 2024).

9.0 References

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Appendix A

Figures

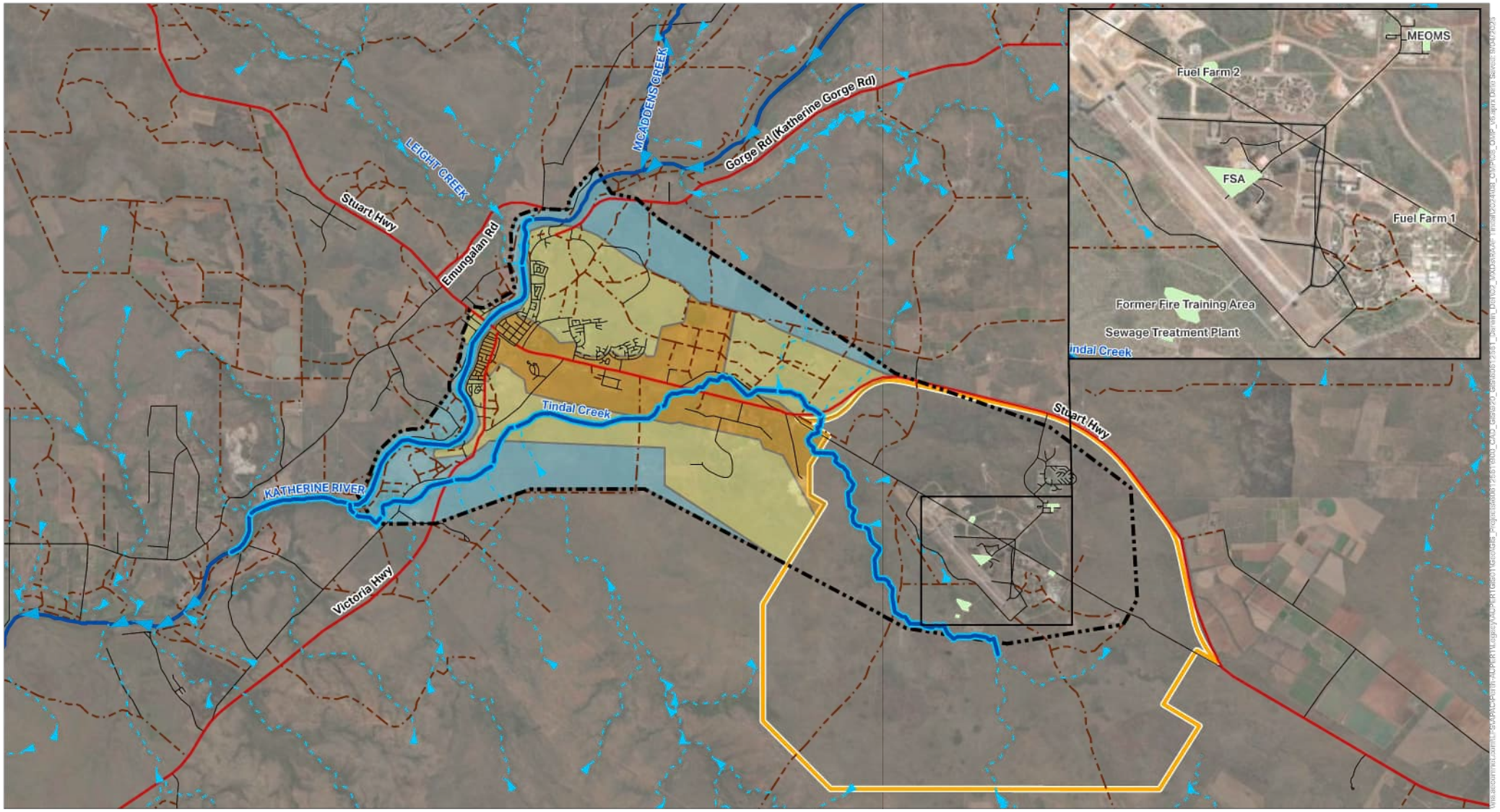

FIGURE F1: PFAS MANAGEMENT AREA

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage
- Zone 1 Groundwater > Recreational Water Criteria
- Zone 2 Groundwater > Drinking Water Criteria
- Zone 5 Groundwater < Criteria
- Source Areas

Note:

Zone 4 - Treated Town Water Supply - Not shown

N

0 1 2 3 km

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Sampling Analysis and Quality Plan
RAAF BASE TINDAL

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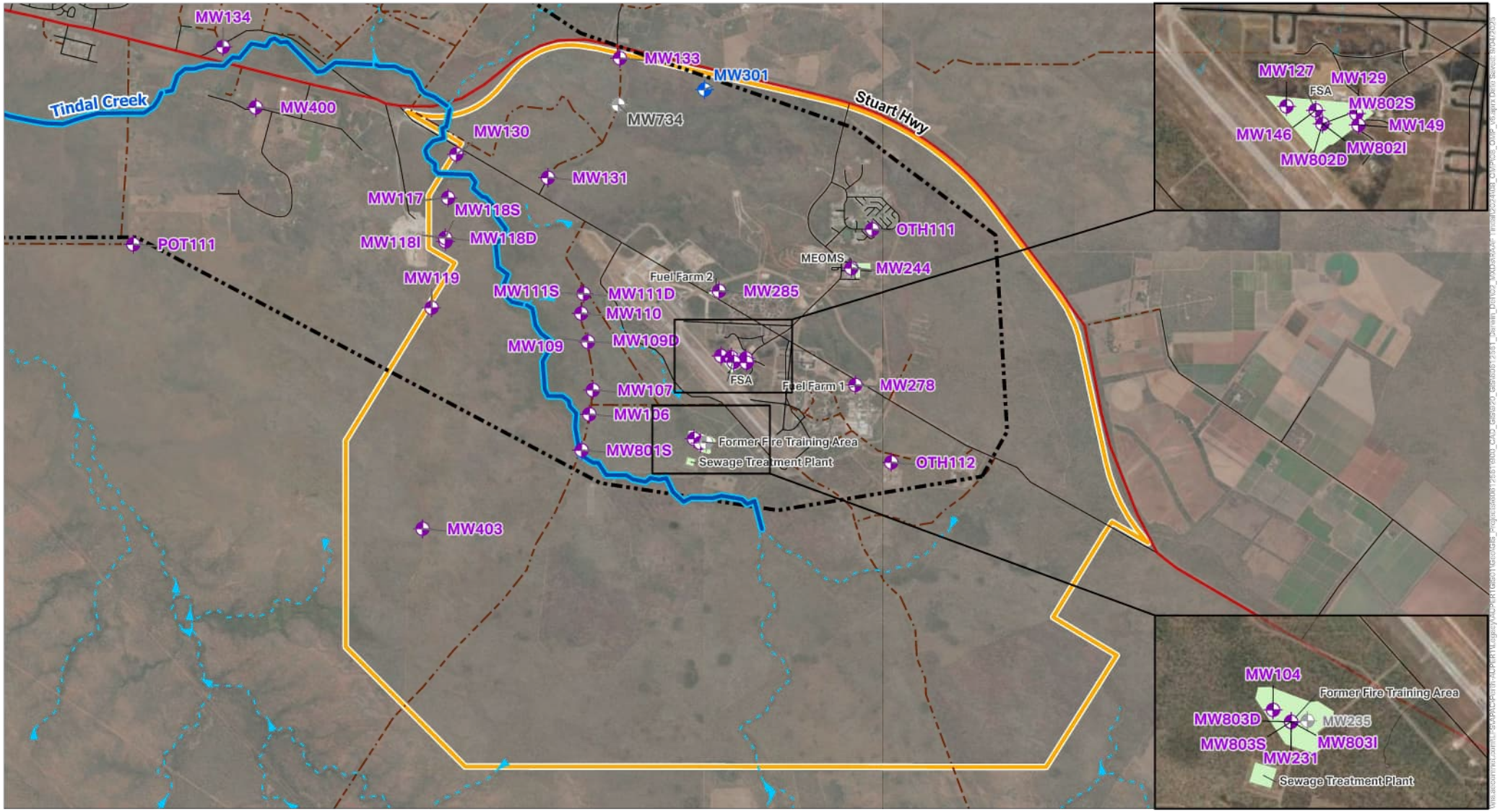

FIGURE F2: ON-BASE GROUNDWATER SAMPLE LOCATIONS

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Drainage
- Annual Groundwater Monitoring Location
- Biannual Groundwater Monitoring Location
- Removed from On-going Management Plan
- Source Areas

N

0 1 2 km

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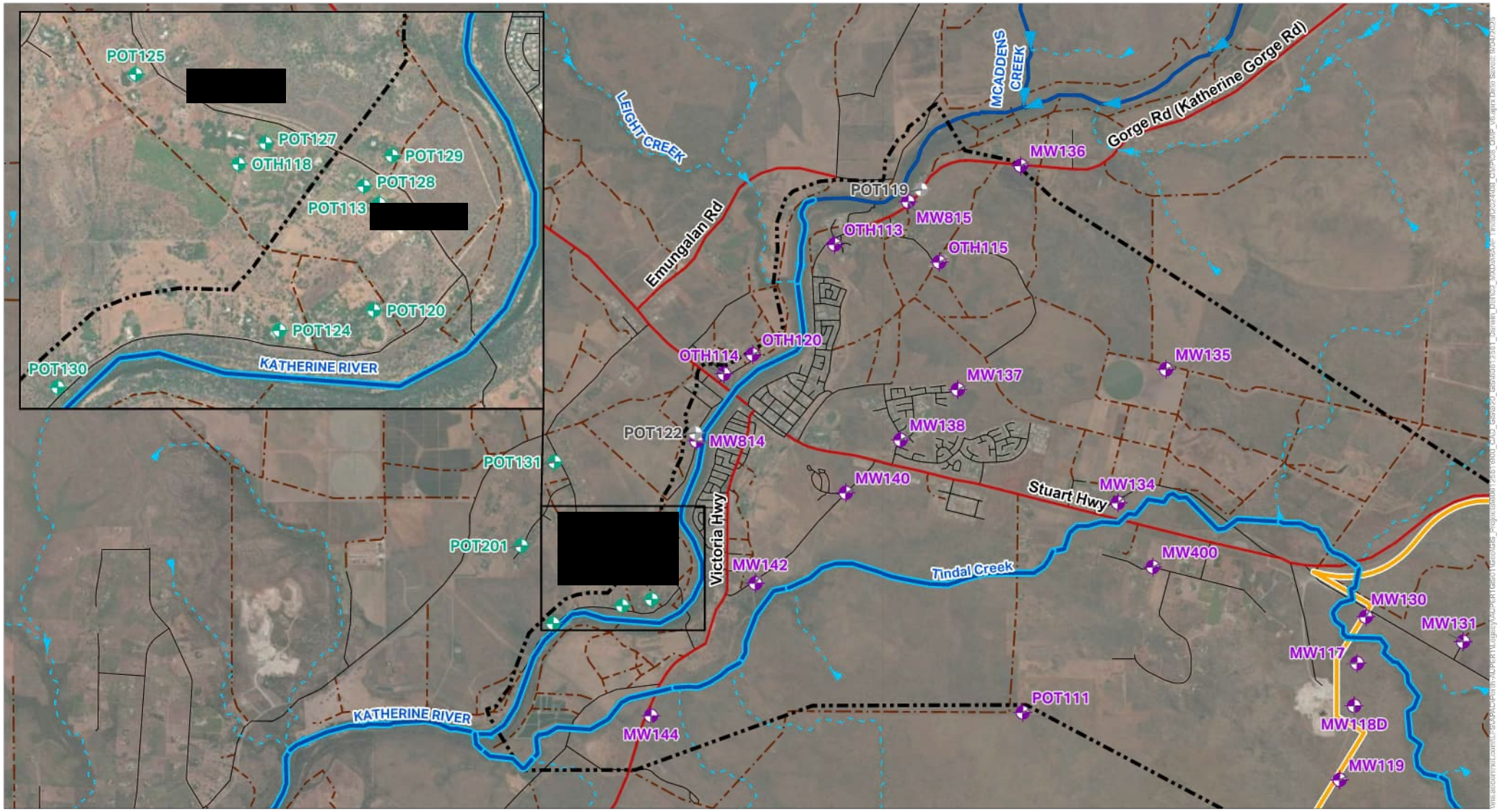

FIGURE F3: OFF-BASE GROUNDWATER SAMPLE LOCATIONS

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage
- Biannual Groundwater Monitoring Location
- Once in Dry Season and Monthly in Wet Season
- Removed from On-going Management Plan

Note:
OTH115 or alternative bore location as identified by Power and Water

OTH117, OTH119, POT114, POT121, POT198 not shown for privacy reasons.

N

0 1 2 km

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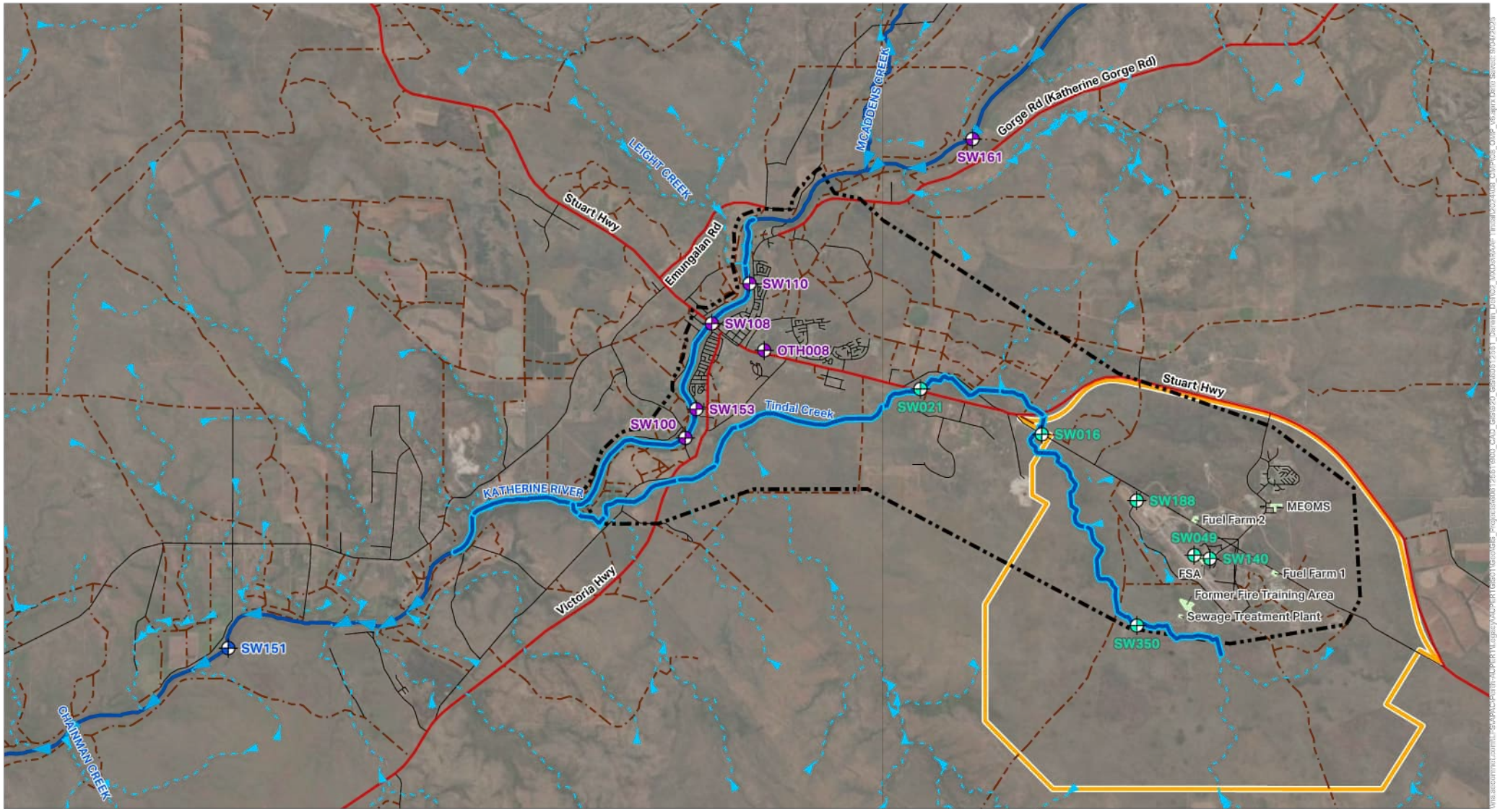

FIGURE F4: SURFACE WATER MONITORING LOCATIONS

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage
- Annual Surface Water Monitoring Location
- Biannual Surface Water Monitoring Locations
- Twice in Wet Season Surface Water Monitoring Locations
- Source Areas

Note:

SW151 is collected at the same time as biota sample collection.

N

0 1 2 3 km

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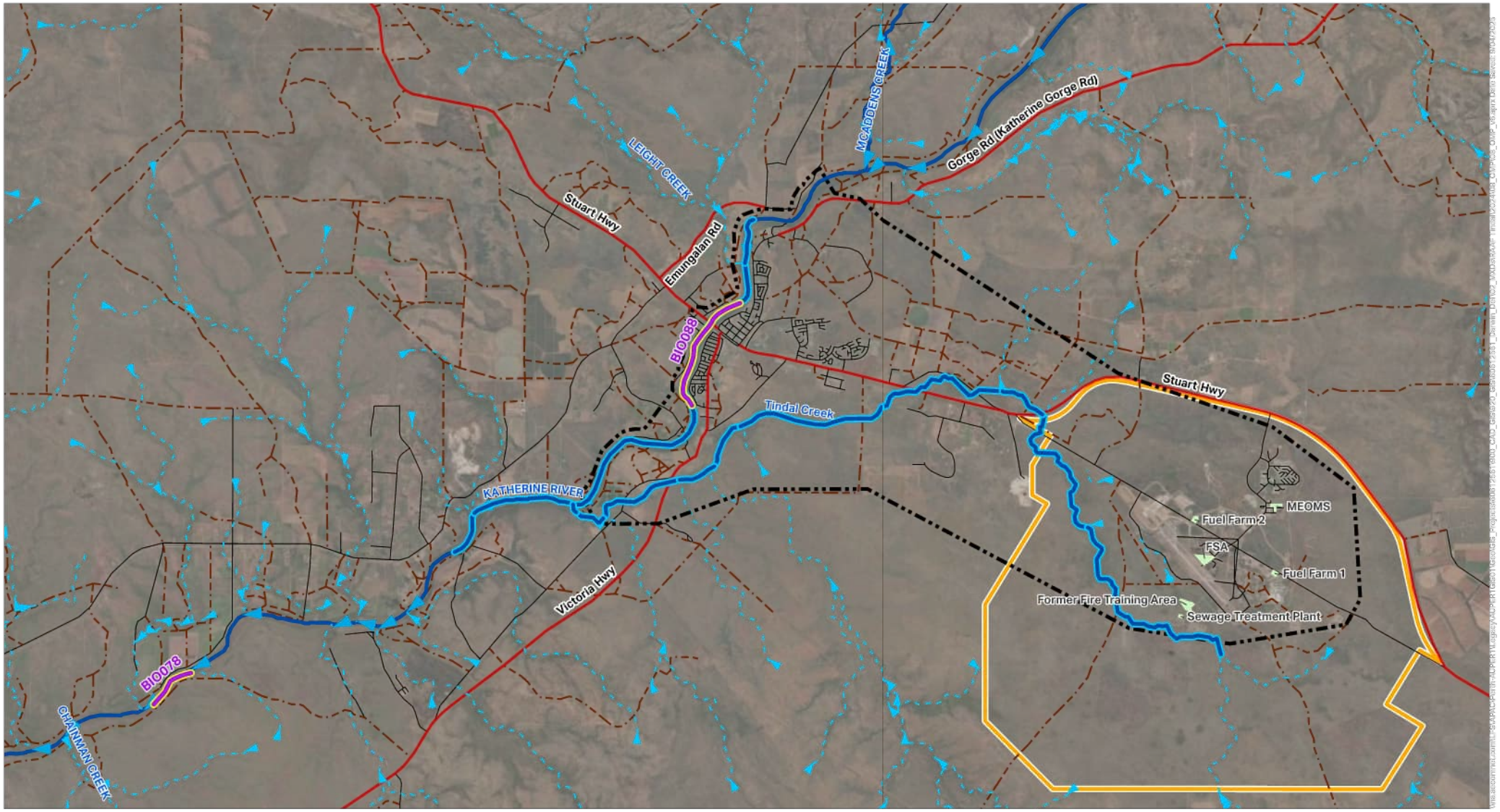

FIGURE F5: BIOTA MONITORING LOCATIONS

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage
- Biota Sampling Locations
- Source Areas

N

0 1 2 3 km

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Appendix B

Schedule

AECOM

Appendix B - Monitoring Schedule

		Sampling	Location	Wet Season						Dry Season					
				Early		Mid		Late		Early		Mid		Late	
				November	December	January	February	March	April	May	June	July	August	September	October
RAAF Tindal	Fieldwork	Groundwater	Private Property - Cossack	Monthly in wet season	Monthly in wet season	Monthly in wet season	Monthly in wet season	Monthly in wet season	Monthly in wet season				Once in dry season		
			On-Base												Annual
			On- and Off-Base					Biannual						Biannual	
		Surface Water	On-Base drains and Tindal Creek	Twice in wet season				Twice in wet season							
			Katherine River											Annual	
			Katherine River, Hot Springs and YMCA Pool					Biannual						Biannual	
		Aquatic Biota	Katherine River										Annual		

Appendix C

Monitoring Locations

Table C-1 RAAF Base Tindal Groundwater Locations

Frequency	Location Code	Historical location ID	On/Off Base	Location	Methodology	Easting	Northing	Screened Intervals (mbgl)	Well Depth (mbgl)	Alternative/Replacement	Rationale/Description
Annual	MW301	-	On-Base	Stuart Highway between Carson Dr and Tarakan Rd	Hydrasleeve	217180.27	8397358.27	3 - 15	15	None	Dry season GME location only due to wet season access concerns
Biannual	MW104	-	On-Base	Fire Training Area	Hydrasleeve	217083	8391953.544	2.5 - 20	20.65	Replace	Approx. 200 m directly downgradient of Fire Training Area. Highest concentration in any of the wells installed along this transect. Would provide good understanding of PFAS leaving the Fire Training Area in groundwater.
Biannual	MW106	-	On-Base	Central Transect	Hydrasleeve	215500	8392314	2.4 - 18	18	None	Central transect boundary road
Biannual	MW107	-	On-Base	Central Transect	Hydrasleeve	215550	8392690.817	1.0 - 15	13.5	MW106	Provides data point ~2km downgradient of Fire Training Area
Biannual	MW109S	-	On-Base	Central Transect	Hydrasleeve	215468	8393437	-	-	None	Central transect boundary road
Biannual	MW109D	-	On-Base	Central Transect	Hydrasleeve	215468	8393437	1 - 20	20	None	Central transect boundary road
Biannual	MW110	-	On-Base	Central Transect	Hydrasleeve	215361	8393873.912	1.2 - 13.2	12.06	MW111	Provides data point approx. 2 km downgradient of source areas
Biannual	MW111D	-	On-Base	Central Transect	Hydrasleeve	215393	8394179	44.7 - 50.7	50.7	None	Central transect boundary road
Biannual	MW111S	-	On-Base	Central Transect	Hydrasleeve	215393	8394179	2 - 15	15	None	Central transect boundary road
Biannual	MW117	-	On Base	Western Base boundary	Hydrasleeve	213333	8395638.664	0.5 - 14.5	14.5	MW118	Monitor PFAS concentrations in groundwater at the Base boundary
Biannual	MW118D	-	On-Base	Base Boundary	Hydrasleeve	213299	8395019	45 - 51	51	None	Base boundary road
Biannual	MW118I	-	On-Base	Base Boundary	Hydrasleeve	213299	8395019	29.9 - 35.9	35.9	None	Base boundary road
Biannual	MW118S	-	On-Base	Base Boundary	Hydrasleeve	213299	8395019	4 - 20	20	None	Base boundary road
Biannual	MW119	-	On-Base	Base Boundary	Hydrasleeve	213105	8393936	0.5 - 19.5	19.5	None	Base boundary road
Biannual	MW127	-	On-Base	Fire Station Area	Hydrasleeve	217476	8393240.406	1.5 - 20	26.72	MW126 or MW128	Approx. 300m downgradient of Fire Station. Highest concentration in this transect of wells. Would provide good understanding of PFAS leaving the Fire Station in groundwater
Biannual	MW129	-	On-Base	Fire Station Area	Hydrasleeve	217848	8393205.031	2.0 - 20	19.6	Replace	Adjacent to AFFF storage tank. Provide indication of groundwater impact at source area
Biannual	MW130	-	On-Base	Base Boundary	Hydrasleeve	213451	8396317	1 - 18	18	None	Base boundary road
Biannual	MW131	-	On-Base	Base Boundary	Hydrasleeve	214834	8395969	1.1 - 15.1	15.1	None	Base boundary road
Biannual	MW133	-	On-Base	Northern Base boundary	Hydrasleeve	215903.514	8397826.936	1.7	19.7	-	Non-detect to minor detect well. This location can act as a point to monitor between source areas and receptors to the north of the base (Lansdowne) and monitor the northern extent of the plume.
Biannual	MW134	-	Off-Base Private property	-	Hydrasleeve	-	-	2.5 - 20	20	MW732 (formerly RN002522)	Impacted well through the centre of the plume off-base
Biannual	MW135	-	Off-Base Private property	-	Hydrasleeve	-	-	2.5 - 19	19	OTH123 (formerly RN033342	Northern edge of the off-Base PFAS plume
Biannual	MW136	-	Off-Base Public land	Landsdowne	Hydrasleeve	208476.471	8402831.635	16.9 - 24.4	24.4	None	Stickup well across road from discovery park
Biannual	MW137	-	Off-Base Public land	Katherine East	Hydrasleeve	207620	8399558.695	2.0 - 20	20.07	OTH122 (formerly RN030662)	Impacted well through the centre of the plume off-Base
Biannual	MW138	-	Off-Base Public land	Katherine East	Hydrasleeve	206814	8398814.436	5.5 - 19.5	19.5	OTH116 (formally RN007437)	Impacted well through the centre of the plume off-base
Biannual	MW140	-	Off-Base Public land	Katherine East	Hydrasleeve	206039	8398035.457	2.7 - 18.7	18.59	RN002475	provide data to estimate mass of PFAS entering Katherine River in the future and monitor any changes
Biannual	MW142	-	Off-Base Public land	Adjacent to Katherine River	Hydrasleeve	204773	8396702.963	3.0 - 18	10.95	MW141	provide data to estimate mass of PFAS entering Katherine River in the future and monitor any changes
Biannual	MW144	-	Off-Base Public land	Adjacent to Katherine River	Hydrasleeve	203314	8394753	3.0 – 20	20	Replace	Concentrations historical reported <LOR or low detect. Ongoing monitoring to assess southern extent of plume

Table C-1 RAAF Base Tindal Groundwater Locations

Frequency	Location Code	Historical location ID	On/Off Base	Location	Methodology	Easting	Northing	Screened Intervals (mbgl)	Well Depth (mbgl)	Alternative/Replacement	Rationale/Description
Biannual	MW146	-	On-Base	FSA	Hydrasleeve	217631.497	8393220.258	6 - 18	18	None	FSA approximately 40m southwest of ECT2 plant
Biannual	MW149	-	On-Base	Fire Station Area	Hydrasleeve	217860	8393142	10.0 - 16.0	16	MW406	Adjacent to Fire Station Area to the west. Location in the area where surface runoff from the Fire Station Area flows to. Provide indication of groundwater impact at source area.
Biannual	MW231	-	On-Base	Fire Training Area	Hydrasleeve	217180	8391890	3.0 - 24	24	MW121	Adjacent to evaporation ponds on the downgradient (western) side. Provide indication of groundwater impact at source area.
Biannual	MW244	-	On-Base	Former Mechanical Equipment Operations Maintenance Sections (MEOMS)	Hydrasleeve	219423	8394622	1.0 - 21.0	21	MW306	Consistently highest reported concentrations in Former MEOMS area. Provide indication of groundwater impact at minor source area.
Biannual	MW278	-	On-Base	Fuel Farm 1	Hydrasleeve	219505	8392814	3.0 - 24	24	MW115	Adjacent to fuel farm - highest concentration reported at FF1. Provide indication of groundwater impact at minor source area.
Biannual	MW285	-	On-Base	Fuel Farm 2	Hydrasleeve	217432	8394245	3.0 - 18.0	18	MW286	Adjacent to fuel farm - highest concentration reported at FF2. Provide indication of groundwater impact at minor source area.
Biannual	MW400	-	Off-Base Public land	Uralla	Hydrasleeve	210418	8397006	30.6 - 36.0, 51.6 - 57.6, 78.6 - 84.6	84.6	Replace	Impacted well through the centre of the plume off-Base
Biannual	MW403	064MW08	On-Base	Central Transect	Hydrasleeve	213008	8390513.033	6.5 - 10.5	10.5	MW735 (formerly RN029430)	Southern Edge of Base
Biannual	MW801S	-	On-Base	Central Transect	Hydrasleeve	215391	8391756	5.4 - 11.4	11.4	None	Central transect boundary road
Biannual	MW802D	-	On-Base	FSA	Hydrasleeve	217668	8393147	16 - 19	19	None	Southwest of the capped FSA area, grouped silver wells
Biannual	MW802I	-	On-Base	FSA	Hydrasleeve	217668	8393147	12.2 - 15.2	15.2	None	Southwest of the capped FSA area, grouped silver wells
Biannual	MW802S	-	On-Base	FSA	Hydrasleeve	217668	8393147	8.5 - 10.2	10.2	None	Southwest of the capped FSA area, grouped silver wells
Biannual	MW803D	-	On-Base	FTA	Hydrasleeve	217180.23	8391890.25	18.8 - 24.8	24.8	None	3 silver grouped wells northwest of ECT2 and behind EPS Excavation
Biannual	MW803I	-	On-Base	FTA	Hydrasleeve	217180.23	8391890.25	12.9 - 15.9	15.9	None	3 silver grouped wells northwest of ECT2 and behind EPS Excavation
Biannual	MW803S	-	On-Base	FTA	Hydrasleeve	217180.23	8391890.25	7.8 - 10.9	10.9	None	3 silver grouped wells northwest of ECT2 and behind EPS Excavation
Biannual	MW814	-	Off-Base	West of Katherine River	Hydrasleeve	203912.478	8398775.704	28-31	31	None	Monitor PFAS concentrations along the western plume on the west of Katherine River
Biannual	MW815	-	Off-Base	Landsdowne	Hydrasleeve	206896.826	8402293.577	28-31	31	None	Monitoring PFAS concentrations to the northern extent east of Katherine River.
Biannual	OTH111	RN028782, MW244, MW520	On-Base	Married Quarters	Hydrasleeve	219732	8395225.993	45 - 60	>30	-	Bore is (or has previously been) used for on-Base irrigation
Biannual	OTH112	RN025650	On-Base	West of Katherine River	Tap	220069	8391621.993	Not Known Base 64m	64	-	Bore is (or has previously been) used for on-Base construction works
Biannual	OTH113	RN021099	Off-Base Public land	Katherine Town Council - Museum	Tap	205836	8401651.993	18 - 30	30	RN022025	To provide data to estimate mass of PFAS entering Katherine River in the future and monitor any changes
Biannual	OTH114	RN033019	Off-Base Private property	Katherine Town Council - Civic Centre	Tap	-	-	Not Known Base 98m	NA	-	This bore has previously reported detectable concentrations of PFAS. Ongoing monitoring to assess PFAS impacts on the western side of Katherine River. Collected from trough outlet on western boundary of property.
Biannual	OTH115	RN7807	Off-Base Government Property	Lansdowne	Tap	207334	8401412	41 - 68	NA	As guided by PWC	Power & Water bore originally installed as a town water production bore
Biannual	OTH120	RN033559	Off-Base Private property	Kalano Community	Tap	-	-	NA	40	None	Detect west of Katherine River. Sample collected from a tap adjacent to bore. Info to be provided after well

Table C-1 RAAF Base Tindal Groundwater Locations

Frequency	Location Code	Historical location ID	On/Off Base	Location	Methodology	Easting	Northing	Screened Intervals (mbgl)	Well Depth (mbgl)	Alternative/Replacement	Rationale/Description
Biannual	POT111	PB077	Off-Base Private property	Uralla	Hydrasleeve	-	-	23 - 29	NA	MW478 (PB050)	Closest non-detect private bore to the southern extent of the plume in Uralla. This and 3 other properties to the south are <LOR and have not received a rainwater tank. Need to monitor this bore and reconsider tanks if a detect is reported. Collection from headworks in gated field at entrance of property
Once in dry season and Monthly in wet season.	OTH117	-	Off-Base Private property	Cossack	Tap	-	-	NA	NA	None	Detect west of Katherine River. Collected from port adjacent to headworks.
Once in dry season and Monthly in wet season.	OTH118	RN024868	Off-Base Private property	Cossack	Tap	-	-	NA	NA	None	Detect west of Katherine River. Sample collected from port adjacent to headworks near card reader sign.
Once in dry season and Monthly in wet season.	OTH119	RN025769	Off-Base Private property	Cossack	Tap	-	-	20 - 27	NA	None	Detect west of Katherine River. Collected from port adjacent to headworks next to control panel.
Once in dry season and Monthly in wet season.	POT112	PB141	Off-Base Private property	Cossack	Tap	-	-	33 - 39	NA	None	Detect west of Katherine River. No town water supply or rainwater tank. Collected from tapped outlet of bore headworks
Once in dry season and Monthly in wet season.	POT114	PB232	Off-Base Private property	Cossack	Tap	-	-	43 - 50	NA	None	Detect west of Katherine River. No town water supply or rainwater tank. Collected from tapped port of permanent sprinkler system 5 m south of bore headworks.
Once in dry season and Monthly in wet season.	POT120	PB092	Off-Base Private property	Cossack	Tap	-	-	50 - 56	NA	None	Detect west of Katherine River. No town water supply or rainwater tank. Collected from water intake within large water tank located approximately 10 m north of the bore and control panel.
Once in dry season and Monthly in wet season.	POT121	PB187	Off-Base Private property	Cossack	Tap	-	-	NA	NA	None	Detect west of Katherine River. No town water supply or rainwater tank. Collection from pump outlet prior to tank. Requires removing hose attachment to sample.
Once in dry season and Monthly in wet season.	POT124	-	Off-Base Private property	Cossack	Tap	-	-	NA	NA	None	Detect west of Katherine River. Sample collected between storage tank and bore headworks.
Once in dry season and Monthly in wet season.	POT125	RN026086	Off-Base Private property	Cossack	Tap	-	-	NA	NA	None	Detect west of Katherine River. Sample collected from port adjacent to headworks next to control panel. Bore feeds into a tank,
Once in dry season and Monthly in wet season.	POT126	RN041870	Off-Base Private property	Cossack	Tap	-	-	NA	NA	None	Detect west of Katherine River. Sample collected from port adjacent to headworks and next to storage tank. Bore feeds into tanks,
Once in dry season and Monthly in wet season.	POT127	RN021096	Off-Base Private property	Cossack	Tap	-	-	NA	NA	None	Detect west of Katherine River. Sample collected from a tap on side of pumphouse that is fed by the bore.
Once in dry season and Monthly in wet season.	POT128	RN021098	Off-Base Private property	Cossack	Tap	-	-	NA	NA	None	Detect west of Katherine River. Collected from port adjacent to headworks along south side of property access road
Once in dry season and Monthly in wet season.	POT129	RN030864	Off-Base Private property	Cossack	Tap	-	-	NA	NA	None	Detect west of Katherine River. Sample collected from tap approximately 20 metres NE of bore location

Table C-1 RAAF Base Tindal Groundwater Locations

Frequency	Location Code	Historical location ID	On/Off Base	Location	Methodology	Easting	Northing	Screened Intervals (mbgl)	Well Depth (mbgl)	Alternative/Replacement	Rationale/Description
Once in dry season and Monthly in wet season.	POT130	-	Off-Base Private property	Cossack	Tap	-	-	NA	NA	None	Owner's request to be included in OMP.
Once in dry season and Monthly in wet season.	POT131	N/A	Off-Base Private property	Cossack	Tap	-	-	NA	NA	None	Detect west of Katherine River. Sample collected from tap to the right of the house.
Once in dry season and Monthly in wet season.	POT198	-	Off-Base Private property	Cossack	Tap	-	-	NA	NA	None	Owner's request to be included in OMP.
Once in dry season and Monthly in wet season.	POT201	-	Off-Base Private property	Cossack	Tap	-	-	NA	NA	None	Owner's request to be included in OMP.
Once in dry season and Monthly in wet season.	POT113	PB193	Off-Base Private property	Cossack	Tap	-	-	35 - 42	NA	None	Detect west of Katherine River. Sample collected directly from tapped bore. Bore is located across from water tank.

Table C-2 RAAF Base Tindal Surface Water Locations

Frequency	Location Code	On/Off Base	Location	Easting	Northing	Longitude	Latitude	Former name	Rationale/Description
Annual	SW151	Off-Base Public land	Katherine River - Galloping Jacks	191700	8390422	132.139347	-14.541763	None	Monitor concentrations of PFAS in Katherine River
Biannual	OTH008	Off-Base Private property	YMCA Pool	205856	8398730	132.271504	-14.468295	PB043	Monitor concentrations of PFAS in the Katherine YMCA pool.
Biannual	SW100	Off-Base Public land	Katherine River - Low-level crossing	203786	8396312	132.252054	-14.489915	KR3_SW001	Monitor concentrations of PFAS in Katherine River
Biannual	SW108	Off-Base Public land	Katherine River - Stuart Hwy	204453	8399446	132.258584	-14.461678	SW109, KR1_SW001, SW077, SW173, SW172	Monitor concentrations of PFAS in Katherine River
Biannual	SW110	Off-Base Public land	Katherine River - Knotts Crossing	205444	8400547	132.267888	-14.451841	None	Monitor concentrations of PFAS in Katherine River
Biannual	SW153	Off-Base Public land	Katherine Hot Springs	204069	8397100	132.254768	-14.482826	None	Monitor concentrations of PFAS in Katherine Hot Springs
Biannual	SW161	Off-Base Public land	Katherine River – Donkey Camp	211349. 1519	8404565. 292	132.323049	-14.416184	SW167	Monitor upgradient concentrations of PFAS in Katherine River
Twice in wet Season	SW016	On-Base	Tindal Creek – Base boundary	213286	8396526	132.340139	-14.488989	TDL WAT 3, SW121	Tindal Creek base boundary
Twice in wet Season	SW021	Off-Base Public land	Tindal Creek - off-Base	210044	8397724	132.310219	-14.477827	SW114, SW115	Tindal creek off-base in Uralla. Adjacent to Stuart Highway
Twice in wet Season	SW049	On-Base	FSA - Runway drain	217380	8393267	132.37774	-14.518859	None	Monitor concentrations within runway drain adjacent to Fire Station Area
Twice in wet Season	SW140	On-Base	FSA - Drain off Fire Station hardstand	215877	8391329	132.38162	-14.5196	None	Monitor concentrations of runoff directly from Fire Station
Twice in wet Season	SW188	On-Base	Western end of runway drain	215832	8394742	132.363547	-14.505368	TDL WAT 2	Capture runoff from runway drains
Twice in wet Season	SW350	On-Base	Tindal Creek - near Fire Training Area	215877	8391329	132.3636	-14.5362	TDL WAT 5	Capture potential PFAS runoff from Fire Training Area into TC.

Prepared for
Department of Defence PFAS Investigation and Management Branch
ABN: 68706814312

Start of Wet Season 2024-2025 Sampling Event Report

PFAS OMP - RAAF Base Tindal

30-Jun-2025
PFAS Ongoing Monitoring Plan

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Start of Wet Season 2024-2025 Sampling Event Report

PFAS OMP - RAAF Base Tindal

Client: Department of Defence PFAS Investigation and Management Branch

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Abbreviations

Abbreviation	Term
AECOM	AECOM Australia Pty Ltd
ALS	Australian Laboratory Services Environmental Pty Ltd
ANZG	Australian and New Zealand Guidelines
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure 1999
DCMM	Defence Contamination Management Manual
COC	Chain of Custody
Defence	Department of Defence
DO	Dissolved Oxygen
DoH	Department of Health
DQO	Data quality objectives
DQI	Data quality indicators
DSI	Detailed site investigation
EC	Electrical Conductivity
HEPA	Heads of Environment Protection Authority
LOR	Limit of Reporting
NATA	National Association of Testing Authorities
NEMP	National Environmental Management Plan
NHMRC	National Health and Medical Research Council
NMI	National Measurement Institute
NSW	New South Wales
NT	Northern Territory
OMP	Ongoing Monitoring Plan
OMR	Ongoing Monitoring Report
PFAS	Per- and poly-fluoroalkyl substances
PFHxS	Perfluorohexanesulfonic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance and Quality Control

Abbreviation	Term
RAAF	Royal Australian Air Force
RPD	Relative percentage difference
SAQP	Sampling and Analysis Quality Plan
SER	Sampling Event Report

List of Units

Unit	Definition	Unit	Definition
^{o}C	degrees Celsius	mg	milligrams
cm	centimetre	mV	millivolts
L	litre	µg	micrograms
m	metre	µS	micro siemens

1.0 Introduction

1.1 Preamble

AECOM Australia Pty Ltd (AECOM) was engaged by the Department of Defence (Defence) in January 2022 to implement the per- and poly-fluoroalkyl substances (PFAS) Management Action Plan (PMAP) (Defence, 2019) for the Royal Australian Air Force (RAAF) Base Tindal ('the base'). Collectively the PMAP implementation comprises a number of services which will collectively be referred to as the 'project' hereafter.

The location of the base with respect the nearby township of Katherine, Northern Territory (NT) is shown on **Figure F1** (**Appendix A**).

The key objectives of the project (in its entirety) are to:

- Implement practicable solutions to prevent or minimise the migration of PFAS beyond the Defence property boundary by addressing significant source area/pathways on the base
- Measure the effectiveness of implemented remedial / management strategies.

The project has been split into five Service Packages, with Service Package 4 (Ongoing Monitoring Plan [OMP] Services) being relevant to this Start of Wet Season 2024-2025 Sampling Events Report.

The primary purpose of the OMP (comprising both dry and wet season sampling) is to monitor changes to the PFAS impact in groundwater and surface water associated with the management / remediation of key sources of PFAS located on base, as initially identified and assessed through the detailed site investigation (DSI) (Coffey, 2018a) (Coffey, 2018b). Changes in PFAS impact may result from the base-specific or cumulative influence of remediation or containment actions, transportation trends, and / or nature induced changes related to dynamic hydrogeology or climatic conditions. Identified changes to PFAS impact originating from the base can inform risk management decisions taken by Defence and Territory agencies to protect human health and the environment. At the end of 2025, an ongoing monitoring report will be prepared that assesses the complete data set collected during the discrete monitoring events completed over the 12-month period. This annual assessment will consider environmental variability and statistically significant trends in PFAS concentrations.

The seasonal monitoring program at the base includes a regime of groundwater and surface water sampling to evaluate these changes in the long term, to enable Defence to maintain an up-to-date understanding of temporal and spatial distribution, concentration, and transport of PFAS. The data collection requirements which were adopted for the project are documented in the Sampling Analysis and Quality Plan (SAQP), Revision 6 (AECOM, 2023).

The most recent PFAS OMP approved in October 2021 (Department of Defence, 2021a), outlines the requirement to conduct biota sampling (once per year), groundwater sampling for private bores (monthly during the wet season and once during the dry season), annual or biannual monitoring of other groundwater locations on- and off-base, and quarterly surface water sampling (up to four times a year) also on- and off-base, as presented in **Table 1** below.

Table 1 Sampling schedule with 'start of wet season' sampling highlighted in green.

Sampling	Wet Season						Dry Season					
	Start		Mid		End		Start		Mid		End	
	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25
Groundwater	Monthly in Wet Season	Monthly in Wet Season	Monthly in Wet Season	Monthly in Wet Season	Monthly in Wet Season	Monthly in Wet Season				Once in Dry Season		
												Annual
				Biannual							Biannual	
Surface Water			Quarterly			Quarterly			Quarterly			Quarterly
		Twice in Wet Season		Twice in Wet Season								
											Annual	
				Biannual							Biannual	
Aquatic Biota											Annual	

1.2 Objectives

The purpose of this SER is to summarise the scope of works and findings from the start of wet season sampling works conducted between November 2024 through to January 2025, in accordance with the SAQP (AECOM, 2023).

This report has been prepared in accordance with the Defence's PFAS OMP Reporting Guidance, (Department of Defence, 2024).

An annual ongoing monitoring report (OMR) will be subsequently developed for the purpose of assessing the data collected during May 2024 through April 2025.

2.0 Scope of Work

2.1 Overarching Scope

The surface water and groundwater sampling works described herein were completed in accordance with the SAQP (AECOM, 2023), where deviations arose, these are listed along with consideration of the significance of the consequence (if any) in **Section 2.3**. Prior to sampling, the SAQP was reviewed to ensure compliance with the following:

- the OMP (Department of Defence, 2021a)
- Heads of the Environment Protection Authority (HEPA), PFAS National Environmental Management Plan (NEMP 3.0) (HEPA, 2025)
- National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended 2013 (ASC NEPM, 2013)
- Defence Routine Environment Water Quality Monitoring Manual (DCMM) (Department of Defence, 2021b)
- AS/NZ 5667:1998 Water quality – Sampling (AS/NZS, 1998)
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018).

The planned scope of works for the start of wet season sampling under the SAQP (AECOM, 2023) includes:

- Surface water sampling (refer to **Table 2**, **Table 3** and **Figure F2** in **Appendix A**):
  - Six ‘twice in wet season’ surface water samples collected in November 2024 from on- and off-base locations
  - Three ‘quarterly’ surface water samples collected in January 2025 from off-base locations
- Groundwater sampling (refer to **Table 4** below and **Figure F2** in **Appendix A)**:
  - 18 ‘monthly in wet season’ groundwater samples collected in November 2024, December 2024 and January 2025 from off-base private property locations
- Collection of relevant quality assurance and quality control (QA/QC) samples
- Laboratory analysis of samples included:
  - the 31 analyte PFAS-suite (full suite) at the standard limit of reporting (LOR) all samples
- Data management of the OMP field and laboratory data in the Defence ESdat database in accordance with the DCMM (Department of Defence, 2021b) Annex L requirements.
- Preparation of this Start of Wet Season 2024-2025 SER.

2.2 Monitoring Locations

The monitoring locations outlined within the SAQP (AECOM, 2023) for the start of wet season sampling events are tabulated below. Deviations from the planned sampling are highlighted in **bold** and detailed in **Section 2.3**.

Table 2 Twice in wet season' surface water sampling locations – December 2024 (Figure F2 in Appendix A).

Area	Description	SAQP Locations
On- and Off-Base	Tindal Creek	SW016, SW350, SW021 (off-Base)
	Runway drain	SW188, SW049
	Drain off Fire Station Handstand	SW140

Table 3 Quarterly surface water sampling locations – January 2025 (Figure F3 in Appendix A).

Area	Description	SAQP Locations
Off-Base	Katherine YMCA Pool	**OTH008**
	Katherine Hot Springs	SW153
	Katherine River	SW108

Table 4 Monthly in wet season' private bore groundwater sampling locations – November 2024, December 2024 and January 2025 (Figure F4 in Appendix A).

Area	Description	SAQP Locations
Off-Base - Private	Shadforth Road	POT114, OTH117, POT120**,** POT130**,** POT124,
	Zimin Drive	POT112, POT113, POT121**,** POT125, POT126[1], POT127, POT128, POT129, OTH118, OTH119[1], POT131,
	Tokmakoff Road	POT198[1], POT201

1 Not presented in **Appendix A** – Figure F3 for privacy reasons.

2.3 Deviations from the SAQP

There were no deviations from the SAQP (AECOM, 2023) for the 'twice in wet season' surface water event and three 'monthly in wet season' private bore sampling events.

The quarterly surface water event in January 2024 included the following deviation from the SAQP (AECOM, 2023), as shown in **Table 5** below.

Table 5 Deviations from the SAQP during the quarterly surface water sampling event.

SAQP	Deviation	Impact on OMP
Quarterly January 2025 Event		
Collection of three surface water samples	• OTH008 (Katherine YMCA Pool) was unable to be sampled	No impact – the pool was closed whilst undergoing renovations, therefore eliminating the potential exposure risk of the public during the closure period.
Monthly in Wet Season 2024-2025 Events		
Analysis of all samples for PFAS full suite standard analysis (LOR is 0.01 µg/L)	A select number of Cossack private property sample locations were selected for PFAS full suite low-level analysis (LOR of 0.002 µg/L).	Minor impact – additional information as PFAS low-level analysis allows for further understanding of PFAS distribution laterally to the west of Katherine River.
Use of National Institute of Measurement (NMI) Sydney as secondary laboratory	During the December 2024 event, National Association of Testing Authorities (NATA) accredited laboratory ALS Environmental Pty Ltd (ALS) Brisbane was used as secondary laboratory instead of NMI as per SAQP.	No impact - The intent of the secondary laboratory is to ensure the results are repeatable when conducted by a different laboratory using different equipment. This ensures both the collected samples and the laboratory equipment utilised provide similar results, indicating both the sample methods and the laboratory equipment are adequate for providing accurate results. Therefore, the use of ALS Brisbane instead of NMI as the secondary laboratory has no material impact on the resulting data quality.

3.0 Sampling Methodology

3.1 Adopted methodology

The methodologies adopted for the groundwater and surface water were in accordance with the applicable revision of the SAQP (AECOM, 2023) noting that deviations in sampling locations have already been discussed in **Section 2.3**.

Table 6 Groundwater and surface water sampling methodology.

Item	Details
Surface water and groundwater methodology	
Surface water sample collection	Surface water samples were collected from either mid-way through the water column or approximately 0.5 m below the surface, dependent on water depth, with care taken to minimise collection of sediment or floating materials in the samples. At each location, laboratory supplied bottles were lowered into the water using a decontaminated aluminium sampling pole with the cap immediately applied once the container was full and retrieved from the water.
Groundwater sample collection	All groundwater samples were obtained from extraction bores located on private properties within the suburb of Cossack. These samples were collected from existing taps on the headworks of the extraction bore. Samples were collected from the 'first-flush' from the tap. Note that groundwater levels are not able to be measured at these locations due to the enclosed headworks.
Water quality parameters	Water quality parameters were recorded ex-situ, concurrent with sample collection, using a YSI Pro Water Quality Meter. Water quality measurements recorded consisted of the following: temperature (^{o}C), electrical conductivity (EC), dissolved oxygen (DO), oxidation-reduction potential (reported as redox), and pH. Observations of odour, colour and clarity (low, moderate or high turbidity) of the samples collected were recorded at each location.
QA/QC samples	Field QA/QC samples included intra- and inter-laboratory duplicates at a rate of 1 in 10 primary samples, rinsate blanks at a rate of 1/day, where decontaminated equipment was used, field blanks at a rate of 1/sampling day and trip blank samples at a rate of 1/cooler.
Sample analysis	Samples were submitted to the primary and secondary laboratories for PFAS analysis. ALS Sydney, New South Wales (NSW) was used as the primary laboratory. NMI of Sydney, NSW and ALS Brisbane was used as the secondary laboratories. ALS and NMI methods for analyses are certified by NATA.

3.2 Adopted screening criteria

Screening criteria were selected on the basis of national guidance in the form of the PFAS National Environmental Management Plan (Version 3.0 PFAS NEMP [2025]), Defence estate and environmental strategies, and Defence PFAS-specific strategies and guidance. Guidance documents used to assess the dataset includes the following:

- Department of Health (DoH) Health Based Guidance Values for PFAS for use in site investigations in Australia (Department of Health, 2019)
- Heads of the Environment Protection Authority (HEPA), PFAS National Environmental Management Plan (PFAS NEMP 3.0) (HEPA, 2025)
- National Health and Medical Research Council (NHMRC), Guidance on PFAS in Recreational Water (NHMRC, 2019)
- National Environment Protection (Assessment of Site Contamination) Measure 1999, Schedule B1, (ASC NEPM, 2013).

A summary of screening criteria used for groundwater and surface water matrices are presented in **Table 7** below.

Table 7 Summary of adopted screening criteria for surface water and groundwater.

Pathway	Compound	Criteria	Comment/reference
Human health receptors			
Drinking water	Perfluorooctanesulfonic acid and Perfluorohexane sulfonate (PFOS + PFHxS)	0.07 micrograms per litre (µg/L)	These values are from the PFAS NEMP 3.0 (HEPA, 2025).
	Perfluorooctanoic acid (PFOA)	0.56 µg/L	
Recreational use	PFOS + PFHxS	2 µg/L	These values are from PFAS NEMP 3.0 (HEPA, 2025).
Ecological receptors			
Freshwater	PFOA	19 µg/L	These values are from the PFAS NEMP 3.0 (HEPA, 2025) *The 99% level of protection has been applied for slightly to moderately disturbed ecosystems. This approach is generally adopted for chemicals that bioaccumulate and biomagnify in wildlife. For the purposes of preliminary screening of analytical water results, the laboratory LOR will be adopted rather than sole use of the criteria value.*
	PFOS	0.00023 µg/L	

The drinking water guideline value has been applied to surface water as the town water supply is partially sourced from surface water from the Katherine River, and the interaction between surface and groundwater due to groundwater expressing through springs and surface water infiltrating into groundwater through sinkholes. The recreational water guideline value has also been applied to groundwater due to groundwater expressing through springs and the use of groundwater extraction for irrigation and recreational use such as the filling of private swimming pools and potentially public swimming pools.

Further to the adopted screening criteria, the OMP (Department of Defence, 2021a) outlines site-specific trigger points that data is to be reviewed against. The OMP triggers are summarised in **Table 8**

below, with recommended actions (if triggers are met) presented in the OMP (Department of Defence, 2021a).

Table 8 OMP Trigger Points

Locations	Trigger Point
Groundwater locations previously below laboratory LOR for PFAS	First time detection of PFAS compounds in groundwater
All monitoring locations (groundwater, surface water or biota)	PFOS+PFHxS and/or sum of PFAS concentrations show an increasing trend (using statistical analysis) over two years of monitoring or increase by >30% in one year.
	PFOS+PFHxS and/or sum of PFAS concentrations show decreasing trend (using statistical analysis) over two years of monitoring or decrease by >30% in one year.
All groundwater monitoring locations	Groundwater monitoring well is not able to be sampled as it is dry, blocked, damaged, decommissioned, inaccessible, lost etc.
Groundwater private bores in Cossack and Emungalan	PFOS+PFHxS and/or sum of PFAS concentrations in a bore show an increasing trend (using statistical analysis) over two years of monitoring or increase by >30% in one year. Or, concentrations are reported above the adopted drinking water health-based screening level.
Groundwater private bore on Uralla Road (POT111)	Concentrations of PFAS are reported in POT111 which indicate an increase in plume size or concentrations above drinking water guidelines.
Groundwater private bore on Gorge Road (POT119)	Detectable concentrations of PFAS are reported in POT119.
MW734	PFOS+PFHxS and/or sum of PFAS concentrations at MW734 show an increasing trend (using statistical analysis (over two years of monitoring or increase by >30% in one year.

4.0 Data quality objectives and data validation

The data quality objectives (DQOs) and data quality indicators (DQIs) adopted for these works are presented in the SAQP (AECOM, 2023).

The data validation report is provided in **Appendix D**.

The analytical data can be used as a basis for interpretation, subject to the limitations outlined below:

November 2024 event:

- The potential exists for concentrations of PFOS to be below the LOR, but above the PFAS Freshwater 99% Species Protection guideline in 12 of 18 groundwater sample locations and should be taken into consideration when interpreting results.
- Elevated Related Percentage Differences (RPDs) for PFHxS (38 %) have been taken into consideration when using the data from batch ES2436471 quantitatively. As concentrations of PFHxS are less than 10 x LOR, where precision is low and actual differences minor, the data is considered to be of an acceptable precision and these elevated RPDs are not considered to affect the interpretation of results against guidelines.

Note: Two ad-hoc samples were collected during the November 2024 ‘monthly in wet season’ private bore sampling event which may be reflected in the laboratory reports and in the data validation assessment, results are reported separately.

December 2024 event:

- The potential exists for PFOS to be above the adopted PFAS Freshwater 99% Species Protection guideline (0.00023 µg/L), but below the laboratory LOR (0.01 µg/L) in nine out of 18 primary water samples in primary lab batch ES2440543 and should be taken into consideration when interpreting results.

January 2025 event:

- The potential exists for concentrations of PFOS to be below the LOR, but above the PFAS Freshwater 99% Species Protection guideline in nine of 25 primary samples and should be taken into consideration when interpreting results.

Data validation procedures employed in the assessment of the field and laboratory QA/QC data are indicative that the overall quality of the analytical data produced is acceptably reliable for the purpose of this report. An examination of sampling analysis data compared to the data validation findings did not result in any results that required flagging for potential inaccuracies or for impacting the current management actions.

All data collected during this event has been reviewed and uploaded to the Defence ESdat database in accordance with DCMM (Department of Defence, 2021b) Annex L requirements.

5.0 Results and discussion

5.1 Surface water results

5.1.1 Surface water field observations and measurements

Table 9 Surface water observations and field measurements from December 2024 and January 2025 sampling events.

Compound	Criteria
Fieldwork dates	The 'twice in wet season' surface water sampling event was completed on 4 December 2024. The quarterly surface water sampling event occurred on 13 January 2025.
Access and sample collection	All surface water sampling locations were accessible and able to be sampled for the December 2024 'twice in wet season' sampling event. During the quarterly sampling event in January 2025, location OTH008 was unable to be sampled due to temporary closure of the pool for renovations as mentioned in **Section 2.3**
Field observations	**'Twice in wet season' event December 2024:** Water within the Tindal Creek and on-Base drains were noted to range from colourless to brown and slightly turbid to turbid and had no odour or sheen. **Quarterly event January 2025:** The Katherine River was noted to be brown, with high turbidity, and no odour or sheen. The Katherine Hot Springs was noted to be colourless with low turbidity, and no odour or sheen. These observations are consistent with historical wet season field observations.
Surface water flow	The Katherine River level was recorded as being at approximately 1.0 m at the Katherine River Railway Bridge on 13 January 2025, recorded from Station G81400 (Northern Territory Department of Environment, Parks and Water Security, 2025). Field observations noted that all locations had 'low flow' during sampling.
Water quality parameters	Stabilised water quality parameter readings are presented in **Table T1** (**Appendix B**) and are summarised below per event. **'Twice in wet season' event December 2024:** • DO ranged from 0.74 milligrams per litre (mg/L) (SW350) to 1.16 mg/L (SW188) indicating poorly to moderately oxygenated water • EC ranged from 183.0 micro siemens per centimetre (µS/cm) (SW350) to 425.2 µS/cm (SW140) indicating freshwater conditions • pH ranged from 5.94 (SW140) to 8.02 (SW188) indicating acidic to alkaline conditions • Redox (corrected) ranged from 162.7 millivolts (mV) (SW350) to 222.3 mV (SW140) indicating oxidising conditions. **Quarterly event January 2025:** • DO ranged from 4.13 mg/L (SW153) to 7.54 mg/L (SW108) indicating oxygenated water • EC ranged from 113.2 µS/cm (SW108) to 809 µS/cm (SW153) indicating freshwater conditions • pH ranged from 7.91 (SW108) to 8.17 (SW153) indicating neutral to alkaline conditions • Redox (corrected) ranged from 291 mV (SW108) to 313.5 mV (SW153) indicating oxidising conditions.

*OTH008 (Katherine Town Pool) was not included in the surface water field summary as the water is artificially chemically controlled, as well as being closed for renovations.

5.1.2 Surface water analytical results

Analytical results from the December 2024 and January 2025 events were consistent with the historical dataset with further discussion of any deviations from the SAQP that occurred in **Section 2.3.** There were no OMP trigger point exceedances from these results.

The PFAS surface water analytical results from the 'twice in wet season' sampling event in December 2024 and quarterly sampling event in January 2025 are presented in **Table T2 (Appendix B)** and visually shown on **Figures F2** and **F3 (Appendix A).**

5.2 Groundwater results

5.2.1 Groundwater field observations and measurements

Table 10 Groundwater field observations and measurements

Compound	Criteria
Fieldwork dates	The three 'monthly in wet season' private sampling events were completed on: • 11 and 12 November 2024 • 9 and 11 December 2024 • 13, 14 and 16 January 2025.
Access and sample collection	All 18 'monthly in wet season' groundwater locations were accessed and sampled in November 2024, December 2024 and January 2025.
Water quality parameters	Where possible, water quality parameters were taken during sample collection using a YSI Pro Water Quality Meter. Stabilised readings are presented in **Table 3** (**Appendix B**). **November 2024 event:** • DO ranged from 1.35 mg/L (OTH117) to 5.52 mg/L (POT120) indicating low to moderately oxygenated water conditions • EC ranged from 665 µS/cm (POT125) to 898 µS/cm (OTH119) indicating freshwater conditions • pH ranged from 6.72 (POT112) to 7.72 (POT131) indicating near neutral conditions • Redox(corrected) ranged from 242.3 mV (OTH125) to 329.3 mV (OTH17) indicating oxidising conditions. **December 2024 event:** • DO ranged from 1.70 mg/L (POT198) to 7.02 mg/L (POT125) indicating low to moderately oxygenated water conditions • EC ranged from 597 µS/cm (POT131) to 889 µS/cm (POT112) indicating freshwater conditions • pH ranged from 7.04 (OTH118) to 7.58 (OTH119) indicating near neutral conditions • Redox(corrected) ranged from 271.9 mV (POT121) to 337.8 mV (OTH17) indicating oxidising conditions. **January 2025 event:** • DO ranged from 1.48 mg/L (POT127) to 6.14 mg/L (POT120) indicating low to moderately oxygenated water conditions • EC ranged from 509 µS/cm (POT131) to 957 µS/cm (OTH119) indicating freshwater conditions • pH ranged from 7.32 (POT131) to 7.86 (POT129) indicating near neutral conditions • Redox (corrected) ranged from 253.6 mV (POT128) and 328.8 mV (POT114) indicating oxidising conditions.

5.2.2 Groundwater analytical results

Analytical results from the three 'monthly in wet season' private bore sampling events were consistent with the historical data set, with further discussion of any deviations from the SAQP that occurred in **Section 2.3**. The following locations presented in **Table 11** show locations that meet OMP trigger point criteria.

Table 11 Locations that meet OMP trigger criteria

Type	Location ID	PFOS+PFHxS concentration (µg/L)	PFOA concentration (µg/L)
		Start of wet season 2024-2025	Start of wet season 2024-2025
First time detections of PFOS+PFHxS and/or PFOA in groundwater (shaded blue)	POT125 (Jan-25)	0.006	<0.002
	POT126 (Jan-25)	0.003	<0.002
	POT127 (Jan-25)	0.003	<0.002
	POT130 (Jan-25)	0.004	<0.002
	POT131 (Jan-25)	0.006	<0.002
	POT198 (Jan-25)	0.003	<0.002
	POT201 (Jan-25)	0.002	0.003

The above listed seven private property samples from January 2025 all reported a first-time detection of PFOS+PFHxS concentrations. While this is an exceedance of the OMP trigger points, this coincides with the adoption of low-level analysis at locations that were previously analysed utilising the standard LOR. Low-level analysis is able to detect PFAS compounds at lower concentrations (LOR is 0.002 µg/L) compared to standard analysis that has a LOR of 0.01 µg/L.

Low level analysis was scheduled for select locations in Cossack that usually report below the standard LOR to understand low level lateral distribution of PFAS to the west of Katherine River.

Monitoring locations with reported PFOS+PFHxS concentrations above their assigned PMAP (Defence, 2019) designated management zone concentrations ranges for groundwater are presented in Table 12**.** The management zone ranges are shown in **Figure F1 – Appendix A.**

Table 12 Locations reported PFOS+PFHxS concentrations above the PMAP (Defence, 2019) designated management zones concentrations ranges.

Assigned Zone	Private Property Event November 2024	Private Property Event December 2024	Private Property Event January 2025
1 – Groundwater > Recreation Water Criteria (2 µg/L)	Nil	Nil	Nil
2 – Groundwater > Drinking Water Criteria (0.07 µg/L) and below Recreation Criteria (2 µg/L)	Nil	Nil	Nil
5 – Groundwater < Criteria (<0.07 µg/L)	POT112 (0.09 µg/L) POT113 (0.13 µg/L)	POT112 (0.10 µg/L) POT113 (0.09 µg/L)	POT113 (0.18 µg/L)

The PFAS groundwater analytical results from the November 2024 through to January 2025 sampling events are presented in **Table T4 (Appendix B)** and visually presented in **Figures F4 – F9 (Appendix A).**

6.0 Summary and next sampling events

6.1 Summary of monitoring events

Findings of the 'start of wet season' 2024-2025 sampling events and recommended actions are summarised in **Table 13** below with OMP trigger conditions and recommended actions summarised in **Table 14.**

Table 13 Summary of sampling event and trigger conditions.

Item	Comment	Recommended Action(s)
Access and collection of samples from all SAQP (AECOM, 2023) locations	• All surface water locations were accessed and sampled, with the following exception from the quarterly sampling in January 2025: - OTH008 was unable to be sampled due to the YMCA swimming pool being closed to the public for renovations. • All groundwater locations were accessed and sampled.	Recommence sampling of OTH008 once the pool reopens to the public. Continue monitoring in accordance with the SAQP and PMAP. Additionally, confirm the source of water used to fill the pool. If determined that no bore water is used to fill the pool and concentrations are shown to be maintained below detection levels, ongoing testing may no longer be required to ensure the water is maintained below the recreational guideline value.
Surface water analytical results	Analytical results from the December 2024 and January 2025 events were consistent with the historical dataset with further discussion of any deviations from the SAQP that occurred in **Section 2.3**	Continue sampling in accordance with the SAQP and OMP.
Groundwater analytical results	Analytical results from the three 'monthly in wet season' private bore sampling events were consistent with the historical data set, with further discussion of any deviations from the SAQP that occurred in **Section 2.3**	Continue sampling in accordance with the SAQP and OMP

Table 14 OMP triggers

Trigger Point	Comment	Recommended Actions
First time detection of PFAS compounds in groundwater.	The following private property samples reported first time detections of PFAS: • POT125, POT126, POT127, POT130, POT131, POT198 and POT201 reported first time detections of PFOS+PFHxS concentrations in the 'monthly in wet season'	Continue sampling in accordance with the SAQP and OMP. Contemplation should be given to the appropriateness of the western boundary of the current groundwater management area and the requirement to implement corresponding actions if:

Trigger Point	Comment	Recommended Actions
	sampling event in January 2025 • POT201 a reported first-time detection of PFOA in the 'monthly in wet season' sampling event in January 2025.	• concentrations of PFOS+PFHxS and/or PFOA in the Cossack area are repeated and/or are near the results reported for the January 2025 sampling event • drinking water guidelines are lowered to below the current standard level LOR (0.01 µg/L). Continue monitoring in accordance with the SAQP and PMAP.
PFOS+PFHxS and/or sum of PFAS concentrations show an increasing trend (using statistical analysis) over two years of monitoring or increase by >30% in one year.	This will be evaluated in the annual OMR using statistical analysis.	Continue monitoring in accordance with the SAQP and PMAP.
PFOS+PFHxS and/or sum of PFAS concentrations show decreasing trend (using statistical analysis) over two years of monitoring or decrease by >30% in one year.	This will be evaluated in the annual OMR using statistical analysis.	Continue monitoring in accordance with the SAQP and PMAP.
Groundwater monitoring well is not able to be sampled as it is dry, blocked, damaged, decommissioned, inaccessible, lost etc.	N/A	N/A
Concentrations are reported above the adopted drinking water health-based screening level in a Cossack or Emungalan private bore.	The following private property bore reported concentrations of PFAS above the drinking water screening criteria (0.07 µg/L): • POT112 (November and December 2024) • POT113 (November, December 2024 and January 2025)	• Provision of alternative water supply has been arranged. • Landowner has been informed of the risks of utilising the bore water for drinking.
Concentrations of PFAS are reported in POT111 which indicate an increase in plume size or concentrations above drinking water guidelines.	This will be evaluated in the annual OMR using statistical analysis.	Continue monitoring in accordance with the SAQP and PMAP.
Detectable concentrations of PFAS are reported in POT119.	N/A	N/A
PFOS+PFHxS and/or sum of PFAS concentrations at MW734 show an increasing trend (using statistical analysis (over two years of monitoring or increase by >30% in one year.	This will be evaluated in the annual OMR using statistical analysis.	Continue monitoring in accordance with the SAQP and PMAP.

6.2 Upcoming sampling events

The next surface water sampling event will be the quarterly sampling planned for April 2025.

The next groundwater sampling event will be the ‘monthly in wet season’ private bore groundwater sampling, which will occur in February 2025.

7.0 References

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[Accessed 13 February 2025].

Appendix A

Figures

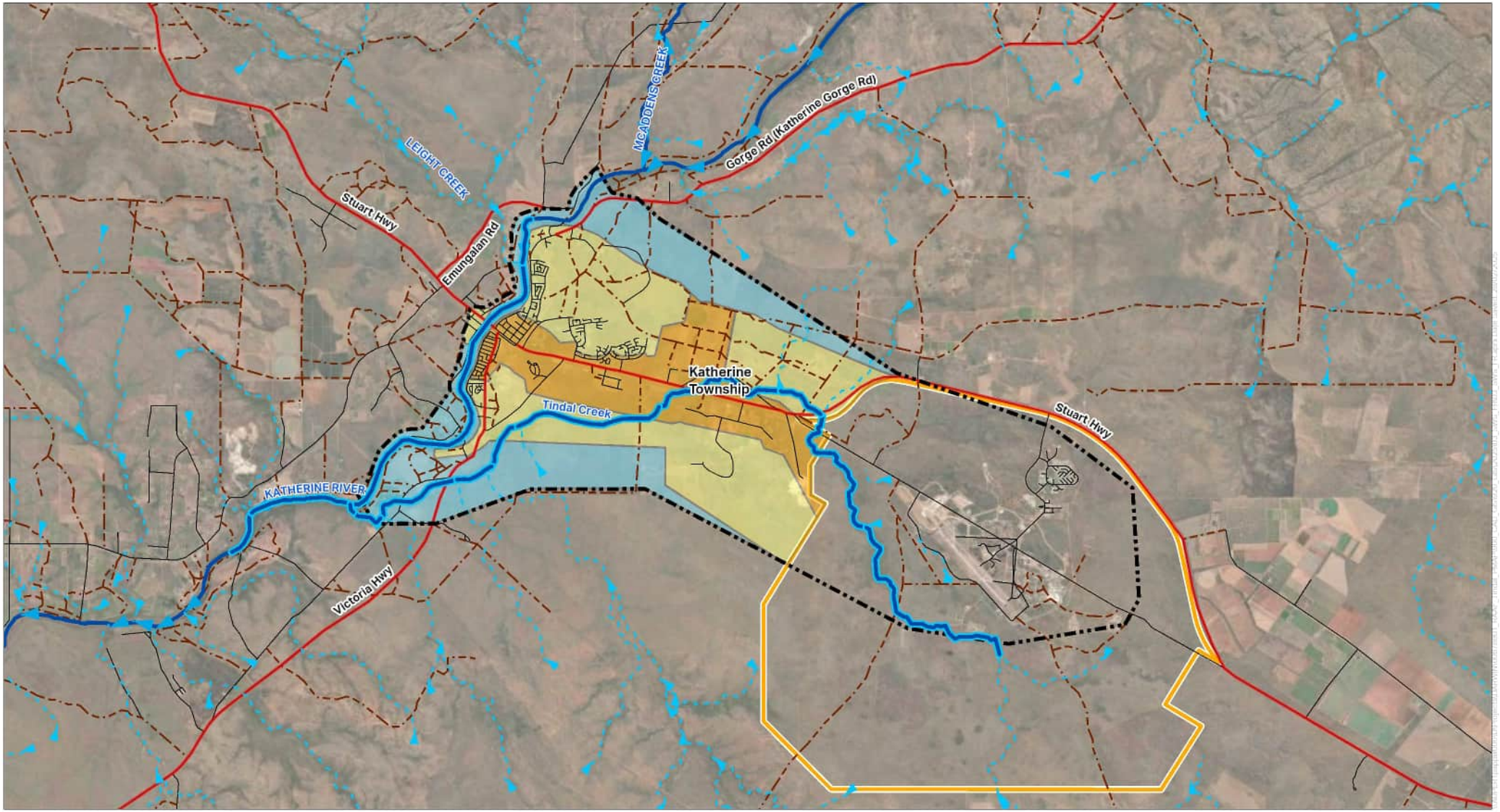

FIGURE F1: PFAS MANAGEMENT AREA

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage
- Zone 1 Groundwater > Recreational Water Criteria
- Zone 2 Groundwater > Drinking Water Criteria
- Zone 5 Groundwater < Criteria

Note:

Zone 4 - Treated Town Water Supply - Not shown

N

0 1 2 3 km

AECOM

PROJECT
Start of Wet Season
Sampling Event Report 2024-2025
RAAF BASE TINDAL

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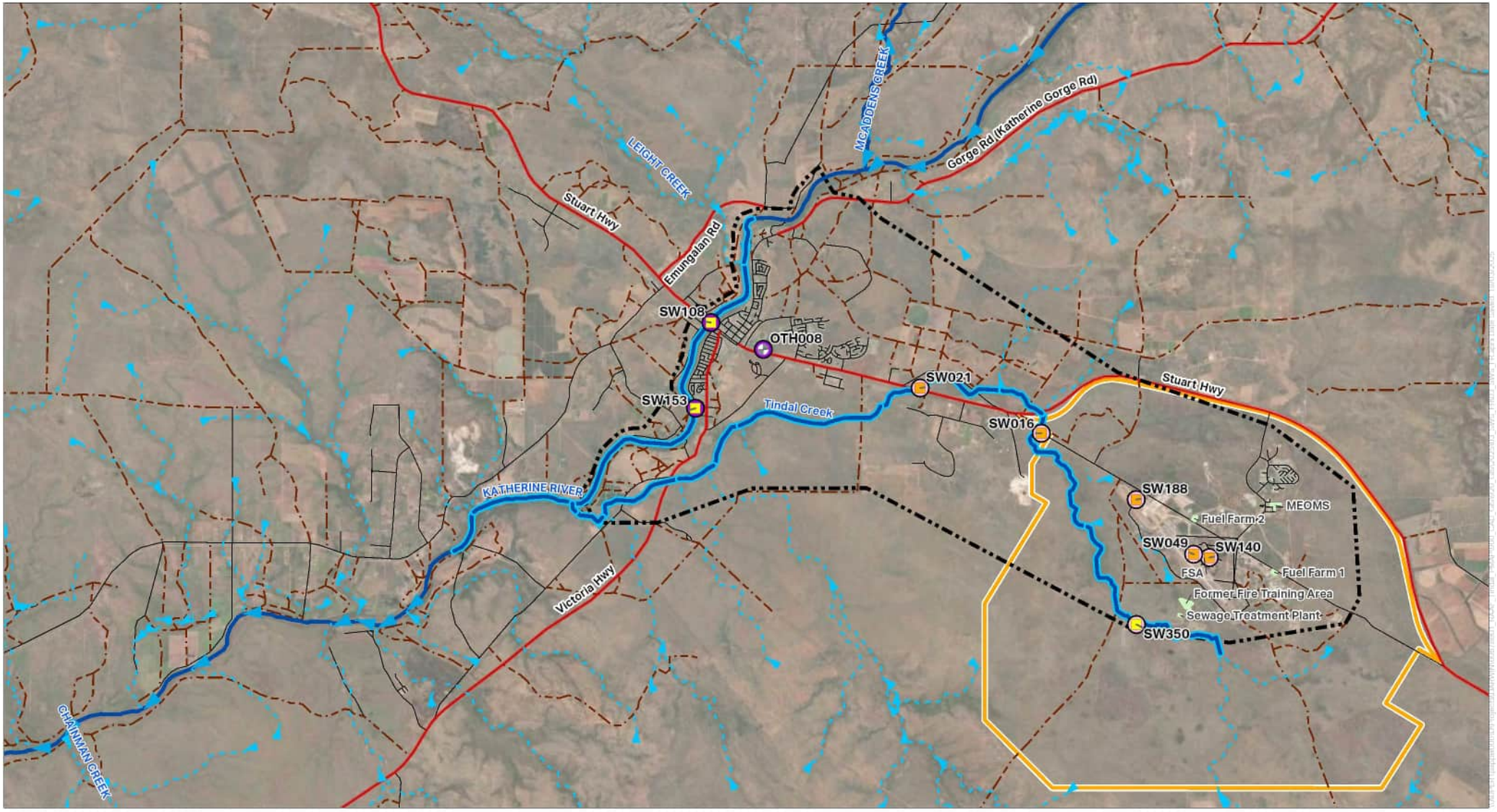

FIGURE F2: SUM OF PFOS+PFHXS CONCENTRATIONS FOR ON- AND OFF-BASE SURFACE WATER LOCATIONS DECEMBER 2024 AND JANUARY 2025 SAMPLING EVENTS

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage
- Source Areas
- Quarterly Surface Water Locations
- Wet Season Surface Water Locations (Twice)

PFOS + PFHxS (µg/L)

- > 10
- > 2 - 10
- > 0.07 - 2
- > Limit of Reporting - 0.07
- < Limit of Reporting
- Surface Water Location (Not Sampled)

N

0 1 2 3 km

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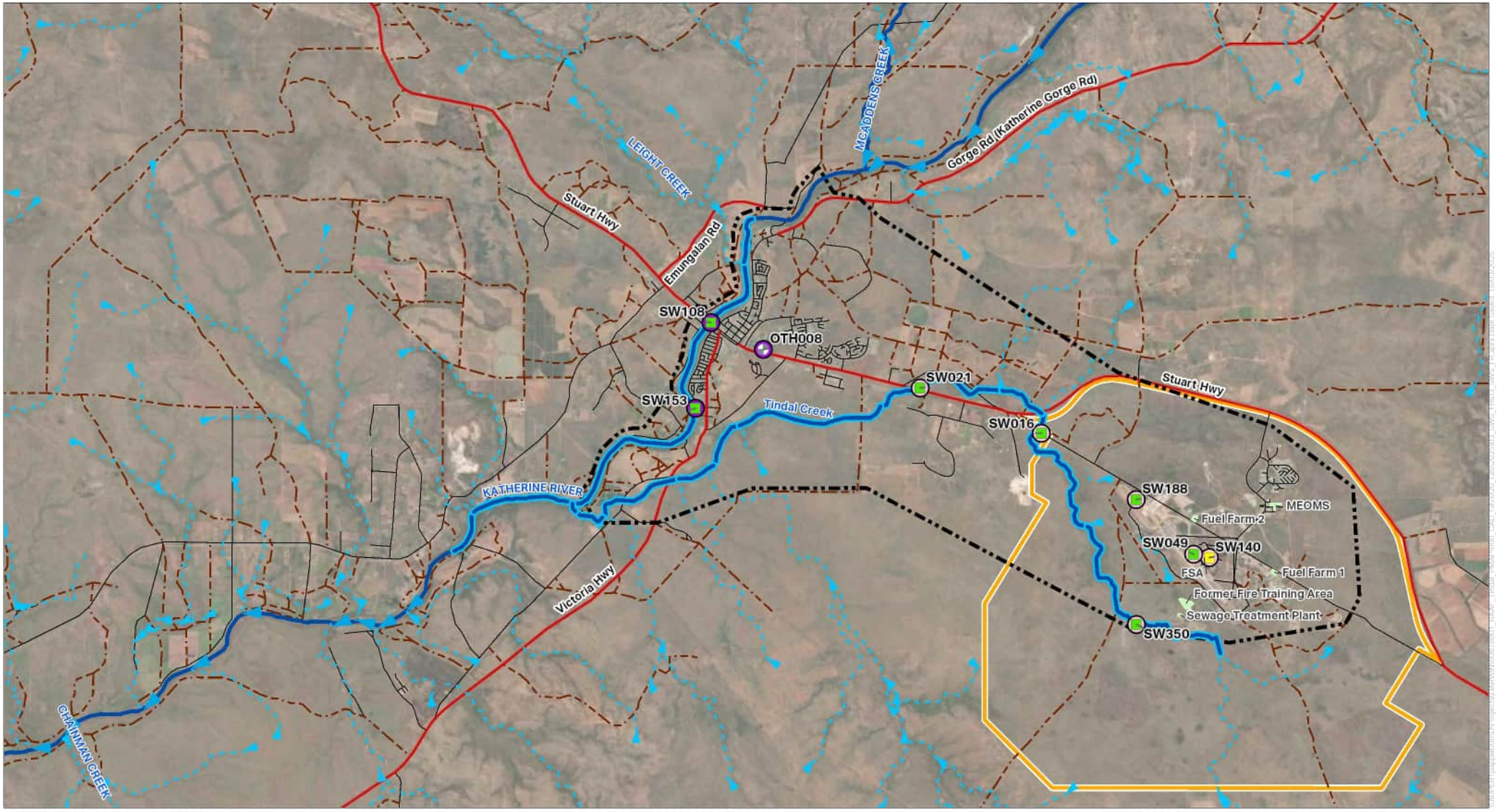

FIGURE F3: SUM OF PFOA CONCENTRATIONS FOR ON- AND OFF-BASE SURFACE WATER LOCATIONS DECEMBER 2024 AND JANUARY 2025 SAMPLING EVENTS

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Highway
- Road
- Track
- Katherine River
- Drainage
- Source Areas
- Wet Season Surface Water Locations (Twice)
- Quarterly Surface Water Locations

PFOA (µg/L)

- > 10
- > 0.56 - 10
- > Limit of Reporting - 0.56
- < Limit of Reporting
- Surface Water Location (Not Sampled)

N

0 1 2 3 km

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Start of Wet Season
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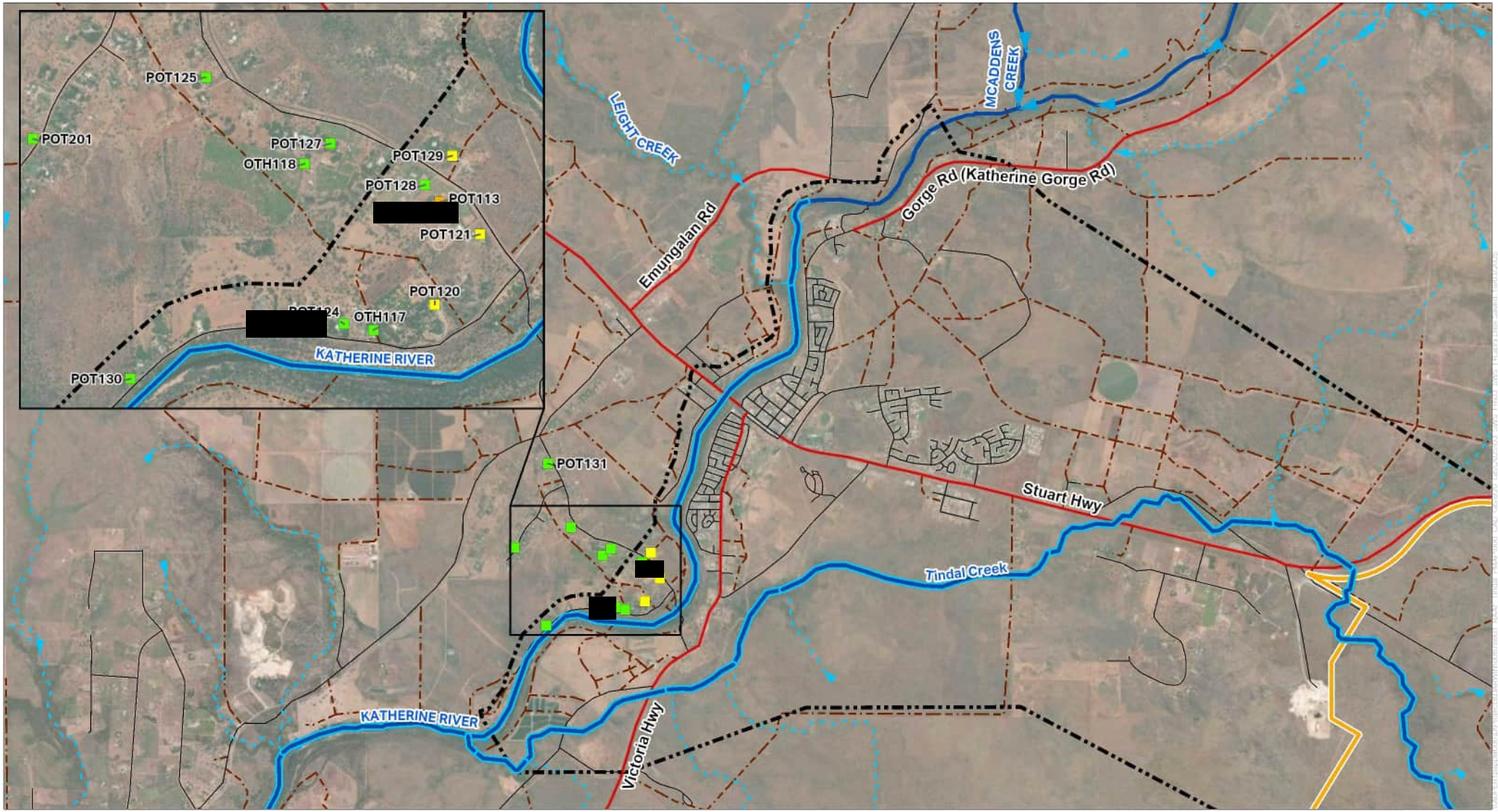

FIGURE F4: SUM OF PFOS+PFHXS CONCENTRATIONS FOR OFF-BASE GROUNDWATER LOCATIONS NOVEMBER 2024 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Katherine River
- Drainage

PFOS + PFHxS (µg/L)

- >50.0
- >10.0 - 50.0
- >2.0 - 10.0
- >0.07 - 2.0
- > Limit of Reporting - 0.07
- < Limit of Reporting

Note:

• OTH119, POT126 and POT198 are not shown on map for privacy reasons.

N

0 1 2 km

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Start of Wet Season
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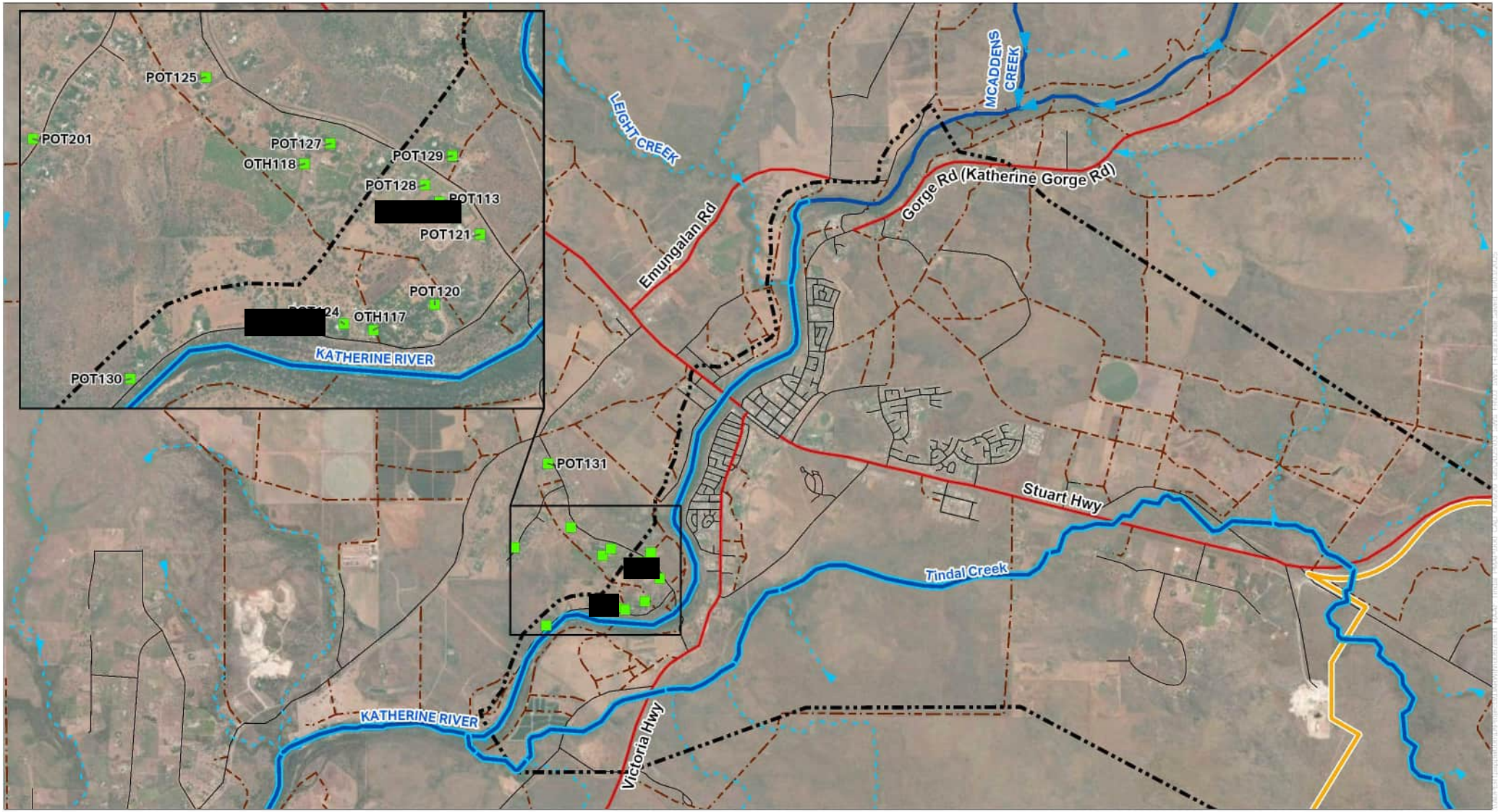

FIGURE F5: SUM OF PFOA CONCENTRATIONS FOR OFF-BASE GROUNDWATER LOCATIONS NOVEMBER 2024 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Katherine River
- Drainage

PFOA (µg/L)

- > 50
- > 10 - 50
- > 0.56 - 10
- > Limit of Reporting - 0.56
- < Limit of Reporting
- Groundwater Monitoring Location (Not Sampled)

Note:

- OTH119, POT126 and POT198 are not shown on map for privacy reasons.

N

0 1 2 km

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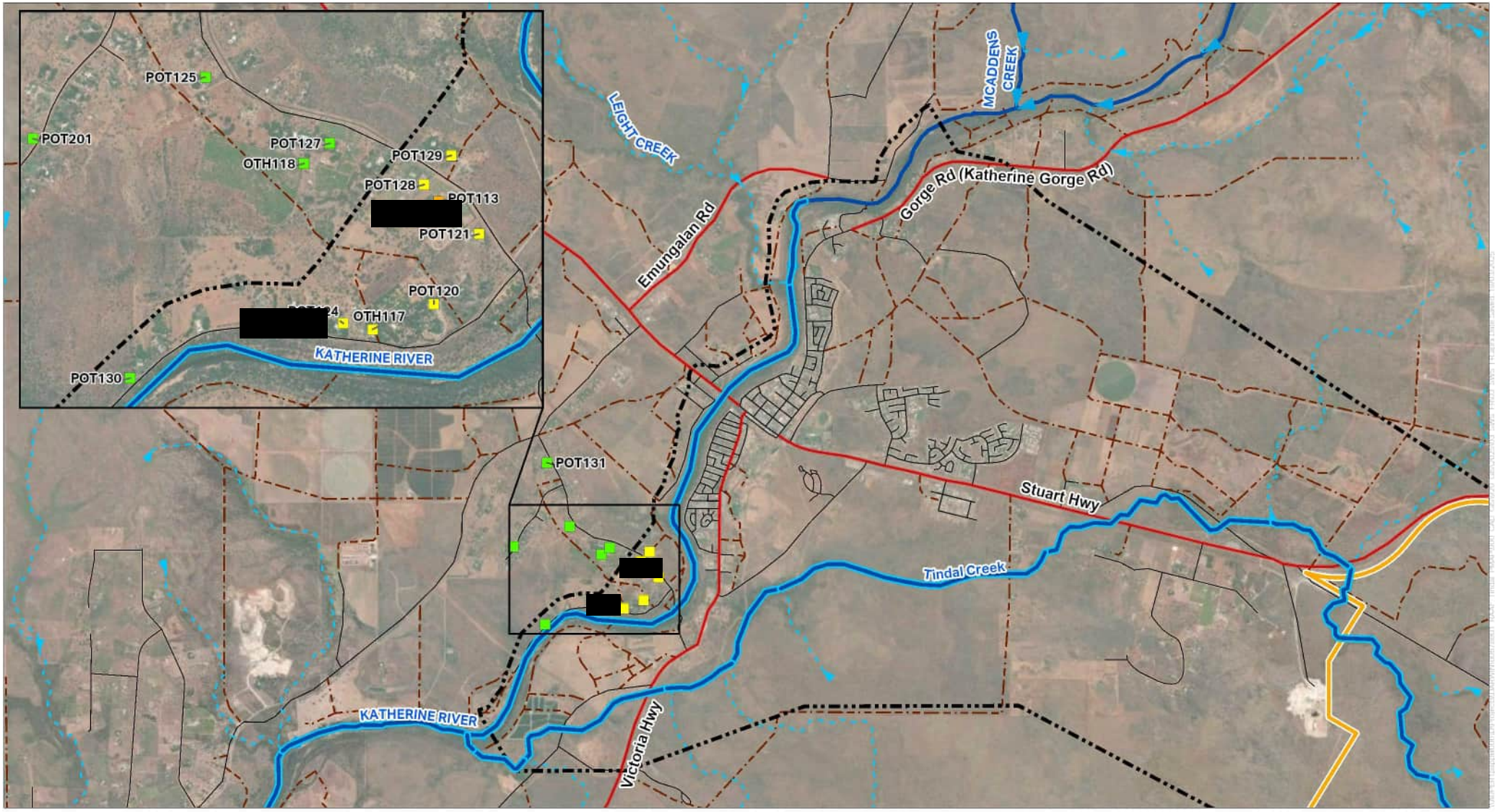

FIGURE F6: SUM OF PFOS+PFHXS CONCENTRATIONS FOR OFF-BASE GROUNDWATER LOCATIONS DECEMBER 2024 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Katherine River
- Drainage

PFOS + PFHxS (µg/L)

- >50.0
- >10.0 - 50.0
- >2.0 - 10.0
- >0.07 - 2.0
- > Limit of Reporting - 0.07
- < Limit of Reporting

Note:

• OTH119, POT126 and POT198 are not shown on map for privacy reasons.

N

0 1 2 km

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PROJECT
Start of Wet Season
Sampling Event Report 2024-2025
RAAF BASE TINDAL

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Source: World Imagery: Earthstar Geographics
World Imagery: Maxar

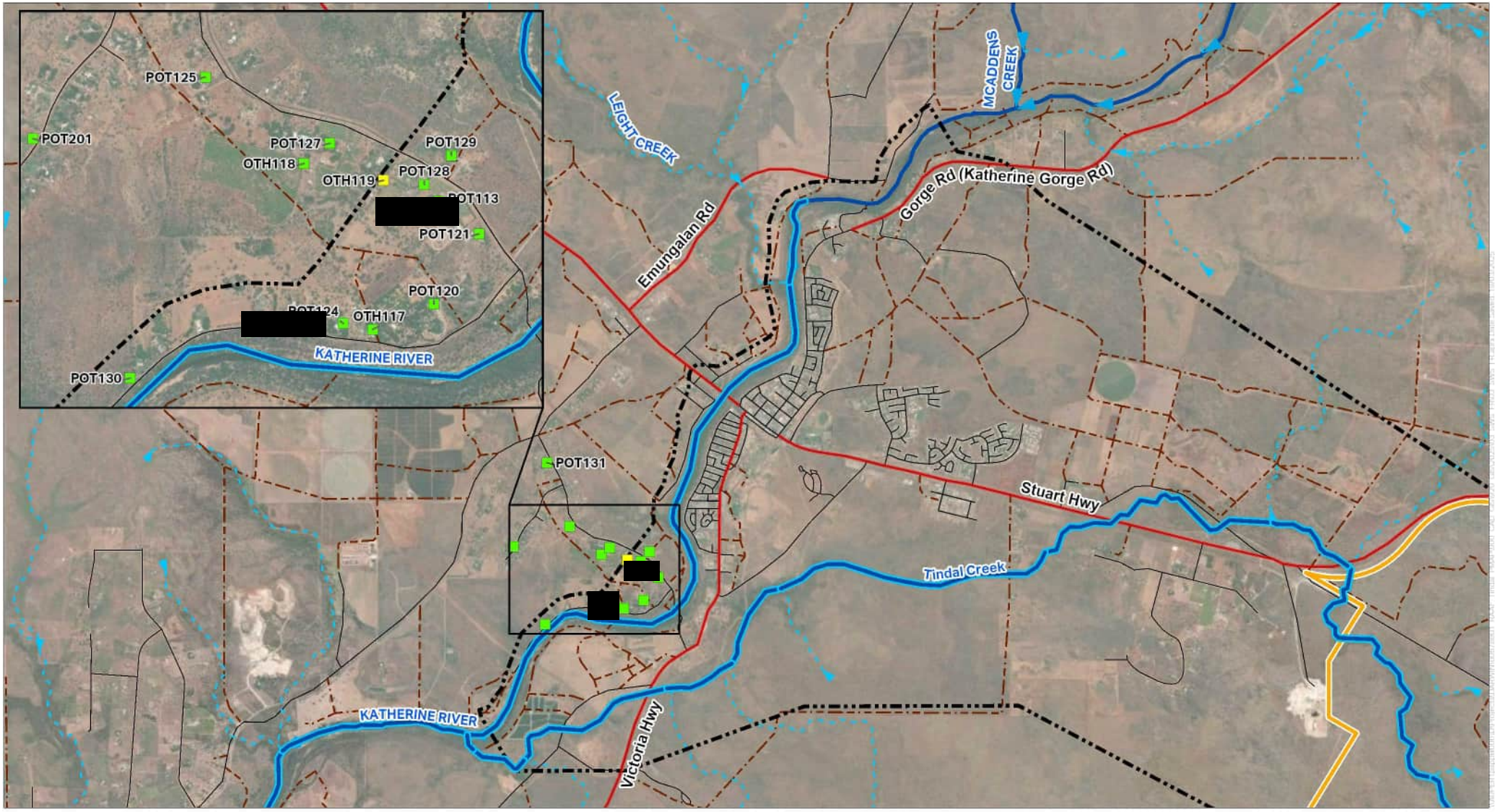

FIGURE F7: PFOA CONCENTRATIONS FOR OFF-BASE GROUNDWATER LOCATIONS DECEMBER 2024 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Katherine River
- Drainage

PFOA (µg/L)

- >19.0
- >10.0 - 19.0
- >0.56 - 10.0
- > Limit of Reporting - 0.56
- < Limit of Reporting

Note:

• OTH119, POT126 and POT198 are not shown on map for privacy reasons.

N

0 1 2 km

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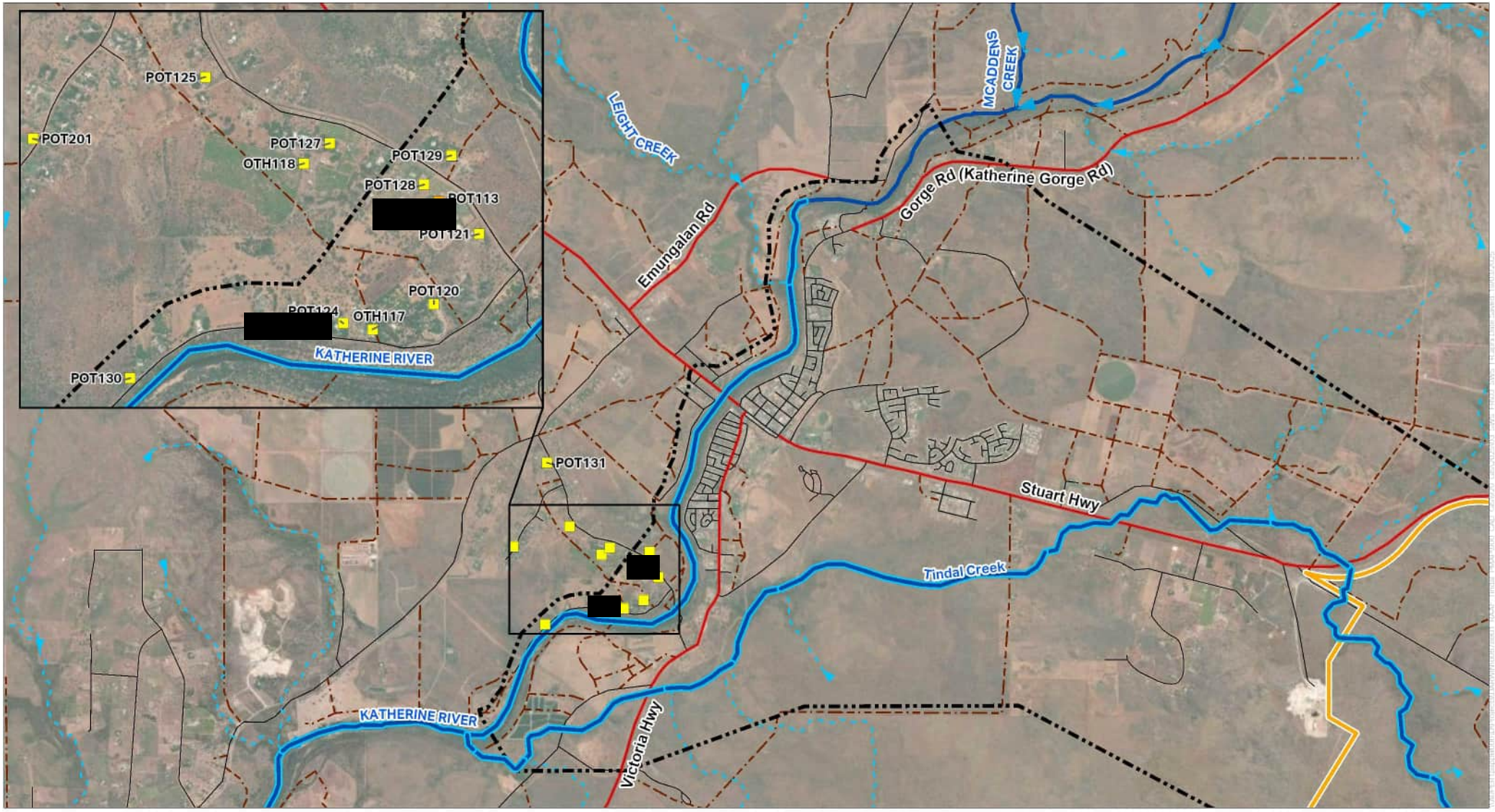

FIGURE F8: SUM OF PFOS+PFHXS CONCENTRATIONS FOR OFF-BASE GROUNDWATER LOCATIONS JANUARY 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Katherine River
- Drainage

PFOS + PFHxS (µg/L)

- >50.0
- >10.0 - 50.0
- >2.0 - 10.0
- >0.07 - 2.0
- > Limit of Reporting - 0.07
- < Limit of Reporting

Note:

• OTH119, POT126 and POT198 are not shown on map for privacy reasons.

N

0 1 2 km

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Start of Wet Season
Sampling Event Report 2024-2025
RAAF BASE TINDAL

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Source: World Imagery: Earthstar Geographics
World Imagery: Maxar

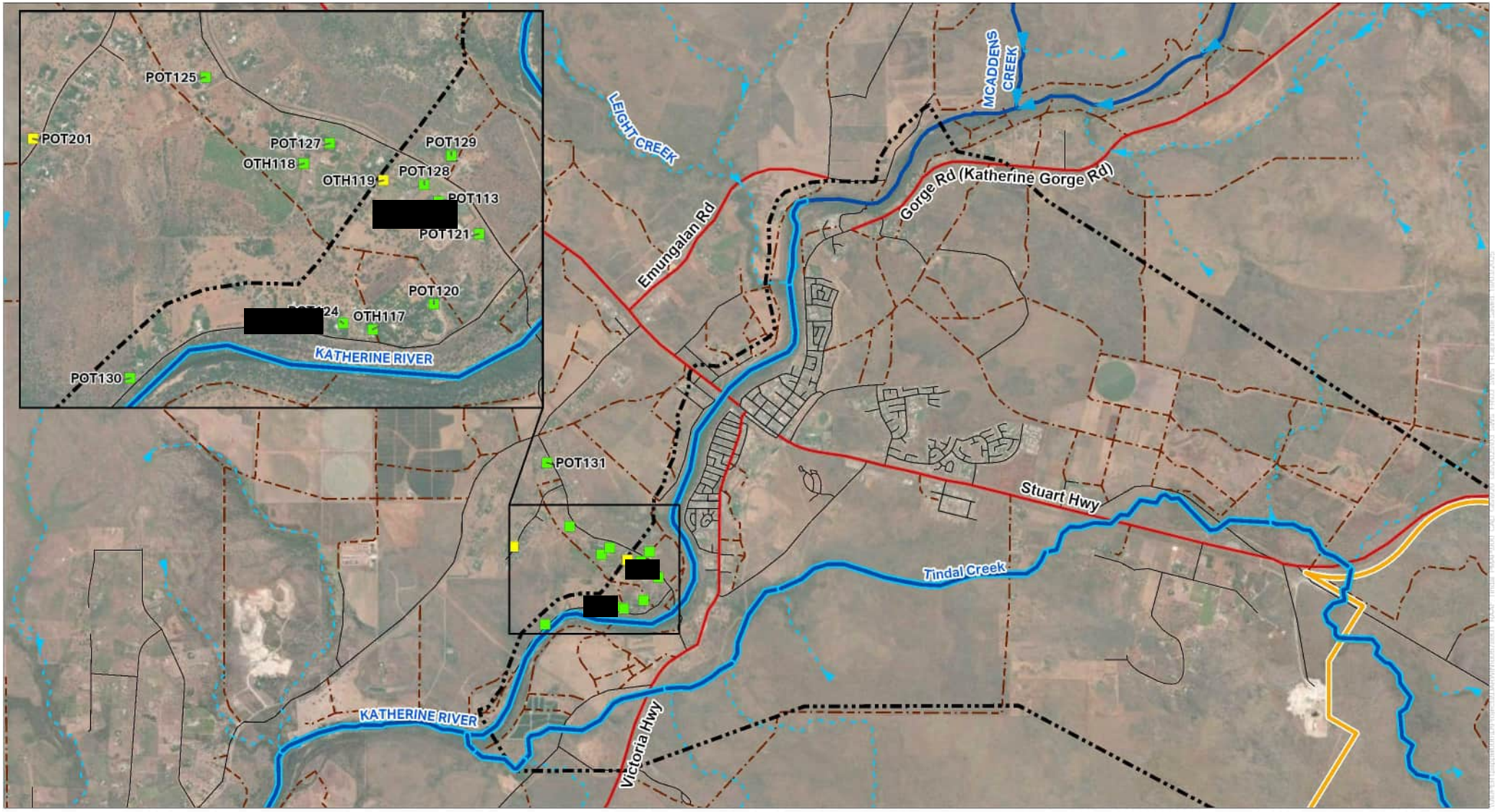

FIGURE F9: PFOA CONCENTRATIONS FOR OFF-BASE GROUNDWATER LOCATIONS JANUARY 2025 SAMPLING EVENT

Legend

- RAAF Base Tindal
- Groundwater Management Area
- Zone 3 - Surface Water Management Area
- Katherine River
- Drainage

PFOA (µg/L)

- >19.0
- >10.0 - 19.0
- >0.56 - 10.0
- > Limit of Reporting - 0.56
- < Limit of Reporting

Note:

• OTH119, POT126 and POT198 are not shown on map for privacy reasons.

N

0 1 2 km

AECOM

PROJECT
Start of Wet Season
Sampling Event Report 2024-2025
RAAF BASE TINDAL

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DEPARTMENT OF DEFENCE

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Source: World Imagery: Earthstar Geographics
World Imagery: Maxar

Appendix B

Tables

Table 1 - Surface Water Field Parameters

AECOM

Sampling Results													
Frequency	**Location ID**	**Date**	**DO (mg/L)**	**EC (µS/cm)**	**pH**	**Redox (mV)**	**Redox (corr) (mV)**	**Temp (^{o}C)**	**Turbditiy**	**Water Colour**	**Odour**	**Sheen**	**Sample Method**
Twice in Wet	SW016	4/12/2024	0.68	192.4	7.16	-14.3	185.7	27.7	High	Light Brown	No odour	No sheen	Grab
	SW021	4/12/2024	0.91	224.9	6.81	-22.3	177.7	34.2	High	Brown	No odour	No sheen	Grab
	SW049	4/12/2024	0.85	208.6	6.88	-23.1	176.9	34.1	High	Brown	No odour	No sheen	Grab
	SW140	4/12/2024	1.03	425.2	5.94	22.3	222.3	34	High	Brown	No odour	No sheen	Grab
	SW188	4/12/2024	1.16	181.3	8.02	2.5	202.5	33.1	High	Brown	No odour	No sheen	Grab
	SW350	4/12/2024	0.74	183	7.13	-37.3	162.7	34.6	Low	Colourless	No odour	No sheen	Grab
Quarterly	OTH008	Inaccessible											
	SW108	13/01/2025	7.54	13.2	7.83	91	291	34	High	Brown	No odour	No sheen	Grab
	SW153	13/01/2025	4.13	809	8.17	113.5	313.5	32.8	Low	Colourless	No odour	No sheen	Grab

Notes:
mg/L: milligram per Litre
µS/cm: microsiemens per centimetre
mV: millivolts
^{o}C: degrees celcius
Corrected redox = redox + 200
*OTH008 was inaccessible due to construction

Client Name: Department of Defence
Project Name: RAAF Base Tindal - PFAS Ongoing Monitoring Plan

Table 2 - Surface Water Analytical Results

AECOM

						Per- and Poly-fluoroalkyl Substances															
						Sum of PFHxS and PFOS	Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonate (PFOS)	Perfluorohexane sulfonate (PFHxS)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotrideca noic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorooctadecanoic Acid (PFODA)	Perfluorononanoic acid (PFNA)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR						0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.002	0.002	0.005	0.02	0.002	0.002		0.002
Human Health Guidelines																					
	PFAS NEMP 2020 Drinking Water					**0.07**	**0.56**														
	PFAS NEMP 2020 Recreational Water					2	10														
Ecological Guidelines																					
	PFAS NEMP 2020 Freshwater 99%						*19*	*0.00023*													
Location ID	**Field ID**	**Date**	**Sample Frequency**	**Sample Type**	**Lab Report Number**																
SW016	**0990_SW016_241204**	**04 Dec 2024**	**Twice in Wet Season**	**Primary**	**ES2439696**	**0.46**	<0.01	*0.40*	0.06	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02
SW049	**0990_SW049_241204**	**04 Dec 2024**	**Twice in Wet Season**	**Primary**	**ES2439696**	**0.57**	<0.01	*0.52*	0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02
SW021	**0990_SW021_241204**	**04 Dec 2024**	**Twice in Wet Season**	**Primary**	**ES2439696**	**0.26**	<0.01	*0.22*	0.04	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02
	0990_QC103_241204	**04 Dec 2024**	**Twice in Wet Season**	**Intra-lab Duplicate**	**ES2439696**	**0.26**	<0.01	*0.22*	0.04	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02
	0990_QC203_241204	**04 Dec 2024**	**Twice in Wet Season**	**Inter-lab Duplicate**	**RN1450878**	-	<0.01	*0.27*	0.049	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	-	<0.01	<0.02	<0.05	<0.01
SW140	**0990_SW140_241204**	**04 Dec 2024**	**Twice in Wet Season**	**Primary**	**ES2439696**	**1.74**	0.43	*1.37*	0.37	<0.05	0.15	1.02	<0.05	0.02	<0.02	<0.05	<0.02	0.05	0.11	-	0.17
SW188	**0990_SW188_241204**	**04 Dec 2024**	**Twice in Wet Season**	**Primary**	**ES2439696**	**0.35**	<0.01	*0.32*	0.03	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02
SW350	**0990_SW350_241204**	**04 Dec 2024**	**Twice in Wet Season**	**Primary**	**ES2439696**	0.01	<0.01	*0.01*	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02
SW108	**0990_SW108_250113**	**13 Jan 2025**	**Quarterly**	**Primary**	**ES2501556**	0.02	<0.01	*0.02*	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	-	<0.02	<0.02	-	<0.02
SW153	**0990_SW153_250113**	**13 Jan 2025**	**Quarterly**	**Primary**	**ES2501556**	0.02	<0.01	<0.01*	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	-	<0.02	<0.02	-	<0.02

Notes:
µg/L: micrograms per litre
LOR: limit of reporting
*: Guideline below the LOR

Table 3 - Groundwater Field Parameters

AECOM

Sampling Results													
Month	**Location ID**	**Date**	**DO (mg/L)**	**EC (µS/cm)**	**pH**	**Redox (mV)**	**Redox (corr) (mV)**	**Temp (^{o}C)**	**Turbditiy**	**Water Colour**	**Odour**	**Sheen**	**Sample Method**
November 2024	OTH117	12/11/2024	0.35	814	6.94	129.3	329.3	34.4	Low	Colourless	No odour	No sheen	Tap
	OTH118	12/11/2024	0.87	797	6.88	66.1	266.1	34.0	Low	Colourless	No odour	No sheen	Tap
	OTH119	11/11/2024	0.73	898	6.81	57.6	257.6	31.4	Low	Colourless	No odour	No sheen	Tap
	POT112	11/11/2024	0.64	803	6.75	70.6	270.6	38.7	Low	Colourless	No odour	No sheen	Tap
	POT113	13/11/2024	0.89	821	6.81	74.3	274.3	32.6	Low	Colourless	No odour	No sheen	Tap
	POT114	12/11/2024	0.55	769	6.90	63.0	263.0	32.7	Low	Colourless	No odour	No sheen	Tap
	POT120	12/11/2024	5.52	754	7.03	56.3	256.3	33.0	Low	Colourless	No odour	No sheen	Tap
	POT121	12/11/2024	0.94	706	7.33	88.6	288.6	32.5	Low	Colourless	No odour	No sheen	Tap
	POT124	12/11/2024	0.94	761	7.45	75.1	275.1	32.1	Low	Colourless	No odour	No sheen	Tap
	POT125	12/11/2024	0.65	665	7.44	42.3	242.3	42.9	Low	Colourless	No odour	No sheen	Tap
	POT126	12/11/2024	0.54	710	7.04	93.0	293.0	32.4	Low	Colourless	No odour	No sheen	Tap
	POT127	12/11/2024	0.69	813	7.20	62.3	262.3	40.2	Low	Colourless	No odour	No sheen	Tap
	POT128	11/11/2024	0.73	779	6.94	76.1	276.1	33.1	Low	Colourless	No odour	No sheen	Tap
	POT129	11/11/2024	1.12	756	7.10	68.5	268.5	32.8	Low	Colourless	No odour	No sheen	Tap
	POT130	12/11/2024	1.46	755	6.99	55.3	255.3	42.4	Low	Colourless	No odour	No sheen	Tap
	POT131	12/11/2024	1.07	709	7.72	66.5	266.5	33.2	Low	Colourless	No odour	No sheen	Tap
	POT198	12/11/2024	0.59	773	6.90	92.7	292.7	32.3	Low	Colourless	No odour	No sheen	Tap
	POT201	12/11/2024	1.04	783	7.47	75.3	275.3	35.4	Low	Colourless	No odour	No sheen	Tap
December 2024	OTH117	9/12/2024	1.74	890	7.16	137.8	337.8	41.6	Low	Colourless	No odour	No sheen	Tap
	OTH118	11/12/2024	2.48	737	7.04	119.6	319.6	31.3	Low	Colourless	No odour	No sheen	Tap
	OTH119	9/12/2024	2.71	837	7.58	83.8	283.8	30.5	Low	Colourless	No odour	No sheen	Tap
	POT112	9/12/2024	1.81	889	7.26	73.8	273.8	37.0	Low	Colourless	No odour	No sheen	Tap
	POT113	9/12/2024	3.75	784	7.09	123.0	323.0	30.9	Low	Colourless	No odour	No sheen	Tap
	POT114	11/12/2024	1.72	726	7.21	114.1	314.1	29.5	Low	Colourless	No odour	No sheen	Tap
	POT120	9/12/2024	4.90	255	7.37	79.7	279.7	32.0	Low	Colourless	No odour	No sheen	Tap
	POT121	9/12/2024	6.75	69.6	72.5	71.9	271.9	29.5	Low	Colourless	No odour	No sheen	Tap
	POT124	11/12/2024	3.39	790	7.52	110.7	310.7	30.4	Low	Colourless	No odour	No sheen	Tap
	POT125	9/12/2024	7.02	723	7.07	121.6	321.6	31.7	Low	Colourless	No odour	No sheen	Tap
	POT126	9/12/2024	2.60	772	7.49	119.2	319.2	34.9	Low	Colourless	No odour	No sheen	Tap
	POT127	11/12/2024	2.90	708	7.26	117.8	317.8	30.0	Low	Colourless	No odour	No sheen	Tap
	POT128	9/12/2024	2.81	753	7.29	75.3	275.3	31.7	Low	Colourless	No odour	No sheen	Tap
	POT129	9/12/2024	6.55	712	7.80	95.0	295.0	29.9	Low	Colourless	No odour	No sheen	Tap
	POT130	11/12/2014	3.77	749	7.21	85.8	285.8	30.7	Low	Colourless	No odour	No sheen	Tap
	POT131	11/12/2024	4.92	597	7.23	114.2	314.2	41.0	Low	Colourless	No odour	No sheen	Tap
	POT198	9/12/2024	1.70	751	7.25	93.5	293.5	29.9	Low	Colourless	No odour	No sheen	Tap
	POT201	11/12/2024	4.39	792	7.25	96.8	296.8	32.3	Low	Colourless	No odour	No sheen	Tap
January 2025	OTH117	13/01/2025	2.10	915	7.83	115.6	315.6	44.1	Low	Colourless	No odour	No sheen	Tap
	OTH118	14/01/2025	3.02	752	7.53	126.1	326.1	30.6	Low	Colourless	No odour	No sheen	Tap
	OTH119	13/01/2025	3.70	957	7.60	68.4	268.4	35.8	Low	Colourless	No odour	No sheen	Tap
	POT112	13/01/2025	2.58	850	7.59	60.8	260.8	33.4	Low	Colourless	No odour	No sheen	Tap
	POT113	13/01/2025	1.77	894	7.78	58.7	258.7	31.7	Low	Colourless	No odour	No sheen	Tap
	POT114	14/01/2025	1.68	722	7.67	128.8	328.8	30.7	Low	Colourless	No odour	No sheen	Tap
	POT120	14/01/2025	6.14	654	7.68	120.6	320.6	27.1	Low	Colourless	No odour	No sheen	Tap
	POT121	13/01/2025	4.74	757	7.77	95.7	295.7	32.5	Low	Colourless	No odour	No sheen	Tap
	POT124	14/01/2025	2.72	768	7.59	128.4	328.4	30.7	Low	Colourless	No odour	No sheen	Tap
	POT125	13/01/2025	6.04	736	7.97	100.1	300.1	31.5	Low	Colourless	No odour	No sheen	Tap
	POT126	13/01/2025	2.51	749	7.76	91.0	291.0	32.0	Low	Colourless	No odour	No sheen	Tap
	POT127	14/01/2025	1.48	704	7.71	122.4	322.4	28.6	Low	Colourless	No odour	No sheen	Tap
	POT128	13/01/2025	2.59	787	7.84	58.7	258.7	31.7	Low	Colourless	No odour	No sheen	Tap
	POT129	13/01/2025	6.31	736	7.86	57.0	257.0	30.5	Low	Colourless	No odour	No sheen	Tap
	POT130	14/01/2025	5.04	747	7.74	110.6	310.6	29.9	Low	Colourless	No odour	No sheen	Tap
	POT131	16/01/2025	4.86	509	7.32	113.2	313.2	27.4	Low	Colourless	No odour	No sheen	Tap
	POT198	14/01/2025	4.32	745	7.64	124.3	324.3	28.7	Low	Colourless	No odour	No sheen	Tap
	POT201	14/01/2025	1.93	725	7.66	125.2	325.2	27.2	Low	Colourless	No odour	No sheen	Tap

Notes:
mg/L: milligram per Litre
µS/cm: microsiemens per centimetre
mV: millivolts
^{o}C: degrees celcius
Corrected redox = redox + 200

Client Name: Department of Defence
Project Name: RAAF Base Tindal - PFAS Ongoing Management Plan

Table 4 - Groundwater Analytical Results

						Per- and Poly-fluoroalkyl Substances																							
						Sum of PFHxS and PFOS	Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonate (PFOS)	Perfluorohexane sulfonate (PFHxS)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexadecanoic acid (PFHxDA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)	Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)
						µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
					LOR	0.002	0.002	0.002	0.002	0.005	0.005	0.005	0.005	0.002	0.002	0.005	0.002	0.002	0.002	0.005	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.01	0.005
Human Health Guidelines																													
	PFAS NEMP 2020 Drinking Water					**0.07**	**0.56**																						
	PFAS NEMP 2020 Recreational Water					2	10																						
Ecological Guidelines																													
	PFAS NEMP 2020 Freshwater 99%						*19*	*0.00023*																					
Event	**Location ID**	**Date**	**Field ID**	**Sample Type**	**Lab Report**																								
November	**OTH117**	**12/11/2024**	**0990_OTH117_241112**	**Primary**	**ES2436915**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	OTH118	**12/11/2024**	**0990_OTH118_241112**	**Primary**	**ES2436912**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
		12/11/2024	**0990_QC101_241112**	**Intra-lab Duplicate**	**ES2437021**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
		11/12/2024	**0990_QC201_241111**	**Inter-lab Duplicate**	**EB2440154**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	OTH119	**11/12/2024**	**0990_OTH119_241111**	**Primary**	**ES2436922**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
		11/12/2024	**0990_QC100_241111**	**Intra-lab Duplicate**	**ES2437021**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
		11/12/2024	**0990_QC200_241111**	**Inter-lab Duplicate**	**EB2440154**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT112	**11/12/2024**	**0990_POT112_241111**	**Primary**	**ES2436924**	**0.09**	<0.01	*0.05*	0.04	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT113	**11/12/2024**	**0990_POT113_241111**	**Primary**	**ES2436928**	**0.13**	<0.01	*0.07*	0.06	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT114	**12/11/2024**	**0990_POT114_241112**	**Primary**	**ES2436920**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT120	**12/11/2024**	**0990_POT120_241112**	**Primary**	**ES2436902**	0.05	<0.01	*0.03*	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT121	**12/11/2024**	**0990_POT121_241112**	**Primary**	**ES2436916**	0.04	<0.01	*0.02*	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT124	**12/11/2024**	**0990_POT124_241112**	**Primary**	**ES2436917**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT125	**12/11/2024**	**0990_POT125_241112**	**Primary**	**ES2436906**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT126	**12/11/2024**	**0990_POT126_241112**	**Primary**	**ES2436914**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT127	**12/11/2024**	**0990_POT127_241112**	**Primary**	**ES2436909**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT128	**11/12/2024**	**0990_POT128_241111**	**Primary**	**ES2436926**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT129	**11/12/2024**	**0990_POT129_241111**	**Primary**	**ES2436927**	0.01	<0.01	*0.01*	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT130	**12/11/2024**	**0990_POT130_241112**	**Primary**	**ES2436904**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT131	**12/11/2024**	**0990_POT131_241112**	**Primary**	**ES2436923**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT198	**12/11/2024**	**0990_POT198_241112**	**Primary**	**ES2436921**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT201	**12/11/2024**	**0990_POT201_241112**	**Primary**	**ES2436919**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
December	**OTH117**	**9/12/2024**	**0990_OTH117_241209**	**Primary**	**ES2440543**	0.025	<0.002	*0.016*	0.009	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005
	OTH118	**11/12/2024**	**0990_OTH118_241211**	**Primary**	**ES2440543**	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005
	OTH119	**9/12/2024**	**0990_OTH119_241209**	**Primary**	**ES2440543**	0.006	0.002	*0.006*	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.004	<0.01	<0.005
	POT112	**9/12/2024**	**0990_POT112_241209**	**Primary**	**ES2440543**	**0.10**	<0.01	*0.06*	0.04	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT113	**9/12/2024**	**0990_POT113_241209**	**Primary**	**ES2440543**	**0.09**	<0.01	*0.05*	0.04	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT114	**11/12/2024**	**0990_POT114_241211**	**Primary**	**ES2440543**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT120	**9/12/2024**	**0990_POT120_241209**	**Primary**	**ES2440543**	0.05	<0.01	*0.03*	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT121	**9/12/2024**	**0990_POT121_241209**	**Primary**	**ES2440543**	0.04	<0.01	*0.02*	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT124	**11/12/2024**	**0990_POT124_241211**	**Primary**	**ES2440543**	0.035	<0.002	*0.021*	0.014	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005
	POT125	**9/12/2024**	**0990_POT125_241209**	**Primary**	**ES2440543**	<0.002	<0.002	<0.002	<0.002	<0.005	0.013	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005
		9/12/2024	**0990_QC100_241209**	**Intra-lab Duplicate**	**ES2440543**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
		9/12/2024	**0990_QC200_241209**	**Inter-lab Duplicate**	**RN1451184**	-	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.02
	POT126	**9/12/2024**	**0990_POT126_241209**	**Primary**	**ES2440543**	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005
	POT127	**11/12/2024**	**0990_POT127_241211**	**Primary**	**ES2440543**	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005
	POT128	**9/12/2024**	**0990_POT128_241209**	**Primary**	**ES2440543**	0.015	<0.002	*0.008*	0.007	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005
	POT129	**9/12/2024**	**0990_POT129_241209**	**Primary**	**ES2440543**	0.020	<0.002	*0.011*	0.009	<0.005	0.022	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.01	<0.005
	POT130	**11/12/2024**	**0990_POT130_241211**	**Primary**	**ES2440543**	<0.002	<0.002	<0.002	<0.002	<0.005	0.040	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005
	POT131	**9/12/2024**	**0990_POT131_241209**	**Primary**	**ES2440543**	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005
	POT198	**11/12/2024**	**0990_POT198_241211**	**Primary**	**ES2440543**	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005
	POT201	**11/12/2024**	**0990_POT201_241211**	**Primary**	**ES2440543**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
January	**OTH117**	**13/01/2025**	**0990_OTH117_250113**	**Primary**	**ES2501556**	0.026	<0.002	*0.016*	0.010	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	0.004	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005
	OTH118	**13/01/2025**	**0990_OTH118_250113**	**Primary**	**ES2501556**	0.005	<0.002	*0.003*	0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005
	OTH119	**13/01/2025**	**0990_OTH119_250113**	**Primary**	**ES2501556**	0.021	0.005	*0.015*	0.006	<0.005	0.016	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.005	<0.01	<0.005
	POT112	**13/01/2025**	**0990_POT112_250113**	**Primary**	**ES2501556**	0.05	<0.01	*0.03*	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT113	**13/01/2025**	**0990_POT113_250113**	**Primary**	**ES2501556**	**0.18**	<0.01	*0.08*	0.10	<0.05	0.07	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT114	**13/01/2025**	**0990_POT114_250113**	**Primary**	**ES2501556**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT120	**13/01/2025**	**0990_POT120_250113**	**Primary**	**ES2501556**	0.05	<0.01	*0.03*	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT121	**13/01/2025**	**0990_POT121_250113**	**Primary**	**ES2501556**	0.04	<0.01	*0.02*	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
	POT124	**13/01/2025**	**0990_POT124_250113**	**Primary**	**ES2501556**	0.022	<0.002	*0.011*	0.011	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005
	POT125	**13/01/2025**	**0990_POT125_250113**	**Primary**	**ES2501556**	0.006	<0.002	0.003	0.003	<0.005	0.016	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005
		13/01/2025	**0990_QC100_250113**	**Intra-lab Duplicate**	**ES2501556**	<0.01	<0.01	<0.01	<0.01	<0.05	0.16	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
		13/01/2025	**0990_QC200_250113**	**Inter-lab Duplicate**	**RN1454300**	-	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.02
	POT126	**13/01/2025**	**0990_POT126_250113**	**Primary**	**ES2501556**	0.003	<0.002	*0.003*	<0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005
	POT127	**14/01/2025**	**0990_POT127_250114**	**Primary**	**ES2501556**	0.003	<0.002	<0.002	0.003	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005
	POT128	**13/01/2025**	**0990_POT128_250113**	**Primary**	**ES2501556**	0.044	<0.002	*0.028*	0.016	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	0.004	<0.002	<0.002	<0.002	<0.002	<0.002	0.003	<0.01	<0.005
	POT129	**13/01/2025**	**0990_POT129_250113**	**Primary**	**ES2501556**	0.061	<0.002	*0.038*	0.023	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	0.003	<0.002	<0.002	<0.005	0.006	0.003	<0.002	<0.002	<0.002	<0.002	0.004	<0.01	<0.005
	POT130	**13/01/2025**	**0990_POT130_250113**	**Primary**	**ES2501556**	0.004	<0.002	<0.002	0.004	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005
		13/01/2025	**0990_QC101_250113**	**Intra-lab Duplicate**	**ES2501556**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
		13/01/2025	**0990_QC201_250113**	**Inter-lab Duplicate**	**RN1454300**	-	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.02
	POT131	**16/01/2025**	**0990_POT131_250116**	**Primary**	**ES2501556**	0.006	<0.002	*0.002*	0.004	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005
	POT198	**14/01/2025**	**0990_POT198_250114**	**Primary**	**ES2501556**	0.003	<0.002	<0.002	0.003	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005
		14/01/2025	**0990_QC102_250114**	**Intra-lab Duplicate**	**ES2501556**	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.05
		14/01/2025	**0990_QC202_250114**	**Inter-lab Duplicate**	**RN1454300**	-	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.01	<0.02	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.02
	POT201	**13/01/2025**	**0990_POT201_250113**	**Primary**	**ES2501556**	0.002	0.003	<0.002	0.002	<0.005	<0.005	<0.005	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.005

Note:
µg/L: micrograms per litre
LOR: limit of reporting
* LOR is above guideline value
Denotes first time detection above LOR for PFOS+PFHxS or PFOA

Client Name: Department of Defence
Project Name: RAAF Base Tindal - PFAS Ongoing Management Plan

Table 4 - Groundwater Analytical Results

					N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	Sum of PFHxS and PFOS	Sum of PFAS
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
					0.005	0.005	0.005	0.002	0.002	0.002	0.002	0.002
Human Health Guidelines												
	PFAS NEMP 2020 Drinking Water											
	PFAS NEMP 2020 Recreational Water											
Ecological Guidelines												
	PFAS NEMP 2020 Freshwater 99%										2	
Event	**Location ID**	**Date**	**Field ID**	**Sample Type**								
November	**OTH117**	**12/11/2024**	**0990_OTH117_241112**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
	OTH118	**12/11/2024**	**0990_OTH118_241112**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
		12/11/2024	**0990_QC101_241112**	**Intra-lab Duplicate**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
		11/12/2024	**0990_QC201_241111**	**Inter-lab Duplicate**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
	OTH119	**11/12/2024**	**0990_OTH119_241111**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
		11/12/2024	**0990_QC100_241111**	**Intra-lab Duplicate**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
		11/12/2024	**0990_QC200_241111**	**Inter-lab Duplicate**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
	POT112	**11/12/2024**	**0990_POT112_241111**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.09	0.09
	POT113	**11/12/2024**	**0990_POT113_241111**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.13	0.13
	POT114	**12/11/2024**	**0990_POT114_241112**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
	POT120	**12/11/2024**	**0990_POT120_241112**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.05	0.05
	POT121	**12/11/2024**	**0990_POT121_241112**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.04	0.04
	POT124	**12/11/2024**	**0990_POT124_241112**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
	POT125	**12/11/2024**	**0990_POT125_241112**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
	POT126	**12/11/2024**	**0990_POT126_241112**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
	POT127	**12/11/2024**	**0990_POT127_241112**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
	POT128	**11/12/2024**	**0990_POT128_241111**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
	POT129	**11/12/2024**	**0990_POT129_241111**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.01	0.01
	POT130	**12/11/2024**	**0990_POT130_241112**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
	POT131	**12/11/2024**	**0990_POT131_241112**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
	POT198	**12/11/2024**	**0990_POT198_241112**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
	POT201	**12/11/2024**	**0990_POT201_241112**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
December	**OTH117**	**9/12/2024**	**0990_OTH117_241209**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	0.025	0.025
	OTH118	**11/12/2024**	**0990_OTH118_241211**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002
	OTH119	**9/12/2024**	**0990_OTH119_241209**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	0.006	0.012
	POT112	**9/12/2024**	**0990_POT112_241209**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.10	0.10
	POT113	**9/12/2024**	**0990_POT113_241209**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.09	0.09
	POT114	**11/12/2024**	**0990_POT114_241211**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
	POT120	**9/12/2024**	**0990_POT120_241209**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.05	0.05
	POT121	**9/12/2024**	**0990_POT121_241209**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.04	0.04
	POT124	**11/12/2024**	**0990_POT124_241211**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	0.035	0.035
	POT125	**9/12/2024**	**0990_POT125_241209**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	0.013
		9/12/2024	**0990_QC100_241209**	**Intra-lab Duplicate**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
		9/12/2024	**0990_QC200_241209**	**Inter-lab Duplicate**	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01	-	-
	POT126	**9/12/2024**	**0990_POT126_241209**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002
	POT127	**11/12/2024**	**0990_POT127_241211**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002
	POT128	**9/12/2024**	**0990_POT128_241209**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	0.015	0.015
	POT129	**9/12/2024**	**0990_POT129_241209**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	0.020	0.044
	POT130	**11/12/2024**	**0990_POT130_241211**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	0.040
	POT131	**9/12/2024**	**0990_POT131_241209**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002
	POT198	**11/12/2024**	**0990_POT198_241211**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002
	POT201	**11/12/2024**	**0990_POT201_241211**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
January	**OTH117**	**13/01/2025**	**0990_OTH117_250113**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	0.026	0.030
	OTH118	**13/01/2025**	**0990_OTH118_250113**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	0.005	0.005
	OTH119	**13/01/2025**	**0990_OTH119_250113**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	0.021	0.047
	POT112	**13/01/2025**	**0990_POT112_250113**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.05	0.05
	POT113	**13/01/2025**	**0990_POT113_250113**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.18	0.25
	POT114	**13/01/2025**	**0990_POT114_250113**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
	POT120	**13/01/2025**	**0990_POT120_250113**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.05	0.05
	POT121	**13/01/2025**	**0990_POT121_250113**	**Primary**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.04	0.04
	POT124	**13/01/2025**	**0990_POT124_250113**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	0.022	0.022
	POT125	**13/01/2025**	**0990_POT125_250113**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	0.006	0.022
		13/01/2025	**0990_QC100_250113**	**Intra-lab Duplicate**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	0.16
		13/01/2025	**0990_QC200_250113**	**Inter-lab Duplicate**	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01	-	-
	POT126	**13/01/2025**	**0990_POT126_250113**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	0.003	0.003
	POT127	**14/01/2025**	**0990_POT127_250114**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	0.003	0.003
	POT128	**13/01/2025**	**0990_POT128_250113**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	0.044	0.051
	POT129	**13/01/2025**	**0990_POT129_250113**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	0.061	0.077
	POT130	**13/01/2025**	**0990_POT130_250113**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	0.004	0.004
		13/01/2025	**0990_QC101_250113**	**Intra-lab Duplicate**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
		13/01/2025	**0990_QC201_250113**	**Inter-lab Duplicate**	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01	-	-
	POT131	**16/01/2025**	**0990_POT131_250116**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	0.006	0.006
	POT198	**14/01/2025**	**0990_POT198_250114**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	0.003	0.003
		14/01/2025	**0990_QC102_250114**	**Intra-lab Duplicate**	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01
		14/01/2025	**0990_QC202_250114**	**Inter-lab Duplicate**	<0.05	<0.02	<0.05	<0.01	<0.01	<0.01	-	-
	POT201	**13/01/2025**	**0990_POT201_250113**	**Primary**	<0.005	<0.005	<0.005	<0.002	<0.002	<0.002	0.002	0.005

Note:
µg/L: micrograms per litre
LOR: limit of reporting
* LOR is above guideline value
Denotes first time detection above LOR for PFOS+PFHxS or PFOA

DRAFT

Appendix C

Calibration Certificates and Sampling Logs

AECOM

Sampling round: 202411_AECOM **Location:** Katherine **Project number & name:** PMAP / OMP_ 60676801

PM: [redacted] **Field staff:** [redacted] **Client:** DoD

Date	YSI #	Temp (°C)	pH 4		pH 7		DO (100%)		EC 1413 (µS/cm)		ORP (mV)		Initials
			Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	
11/11/24	13	30°	4.04	4.02	7.02	7.02	100	–	1648	1550	220	–	[redacted]
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
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							100						
							100						
							100						
							100						

Notes:

ANZ

AECOM

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	PP	Project Number:	60676801	PM Name:	[redacted]
Client:	DoD	Project Location:	Katherine	Fieldwork Staff:	

Surface Water/Groundwater: Well Development or Well Sampling Event? (circle)

Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	☐ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☐ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Date	Location ID	QAQC	Turbidity (NTU)	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
11/12/24	901201	–	–	4.39	792	7.29	96.8	32.3	Colourless, No, NS, low turb
	POT 124	–	–	3.39	790	7.52	110.7	30.4	" " " "
	POT 114	–	–	1.72	726	7.21	114.1	29.5	" " " "
	Pot 127	–	–	2.90	708	7.26	117.8	30.0	" " " "
	OTH118	–	–	2.48	737	7.04	119.6	31.3	" " " "
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)	QC101
		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic	QC201
					POT198.

Bore volume calculation, bore condition, fate of tubing, redox correction etc.

[redacted] Approval and Distribution

[redacted]

[redacted] Signature Date

Checker Name and Signature Date

Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

AECOM

Q4AN(EV)-405-FM1

Project Name:	PMAP	Project Number:	60676801	PM Name:	[redacted]
Client:	DoD	Project Location:	Katherine	Fieldwork Staff:	

Surface Water/Groundwater:

Well Development or Well Sampling Event? (circle)

Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	☐ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☐ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Date	Location ID	QAQC	Turbidity (NTU)	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
9/12/24	Pot112	—	—	1.81	889	7.26	73.8	37	Colourless, No, NS, low turb.
9/12/24	Pot128	—	—	2.81	753	7.29	75.3	31.7	"
OTH119	~~Pot113~~	—	—	2.81	1837	7.58	83.8	30.5	"
	Pot129	—	—	6.55	717	7.80	95	29.9	"
	Pot113	—	—	3.75	784	7.09	123	30.9	"
	Pot126	—	—	2.00	772	7.49	119.2	34.9	"
	Pot131	—	—	4.92	597	7.23	114.2	41	"
	Pot125	QC100 QC200	—	7.02	723	7.07	121.6	31.7	"
	OTH117	—	—	1.74	890	7.16	137.8	41.6	"
11/12/24	Pot130	—	—	3.77	749	7.21	85.8	30.7	"
	Pot121	—	—	6.75	698	7.25	71.9	29.5	"
	Pot120	—	—	4.90	75	7.37	79.7	~~81.7~~ 82.0	"
	Pot118	QC101 QC201	—	1.70	789	7.25	29.9	93.5	"
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic	

Approval and Distribution

[redacted]

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AECOM

Sampling round: **Location:** Katherine **Project number & name:** 60676501

PM: [redacted] **Field staff:** [redacted] **Client:** DoD

Date	YSI #	Temp (°C)	pH 4		pH 7		DO (100%)		EC 1413 (µS/cm)		ORP (mV)		Initials
			Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	
11/12/24	B	29.1	4.02	—	7.05	7.01	100	—	1413	—	273	28.4	[redacted]
[redacted]							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						

Notes:

AECOM

Sampling round: **Location:** Katherine **Project number & name:** 60676801

PM: [redacted] **Field staff:** [redacted] **Client:** DoD

Date	YSI #	Temp (°C)	pH 4		pH 7		DO (100%)		EC 1413 (µS/cm)		ORP (mV)		Initials
			Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	
9/12/24	B	28.4	4.04	4.02	7.01	7.01	100	—	1444	—	26.1	28.4	[redacted]
10/12/24	B	29.1	4.02	4.01	7.02	7.01	100	—	1411	—	28.2	29.2	
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						
							100						

Notes:

Autosampler Δ PP

ANZ

FQM - Groundwater Sampling and Purging Record

AECOM

Q4AN(EV)-405-FM1

Project Name:	PFASamp	Project Number:	60676801	PM Name:	[redacted]
Client:	PoD	Project Location:	Tindal	Fieldwork Staff:	

Surface Water/Groundwater:

Well Development or Well Sampling Event? (circle)

Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	☐ Dedicated	Intake depth:	Hydrasleeve Type:	Gauging
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Hydrasleeve in
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve out
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Parameters
	Key Type (if applicable):	☐ Retrieved				
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Date	Location ID	QAQC	Turbidity (NTU)	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
13.01.25	Pot112	—	—	2.58	850	7.59	60.8	33.4	Colourless, No, NS
	Pot113	—	—	1.77	894	7.78	50.7	31.7	" " "
	Pot128	—	—	2.59	787	7.84	53.6	31.5	" "
	Pot129	—	—	6.31	736	7.86	57.0	30.5	" "
	OTH119	—	—	3.70	957	7.60	88.4	35.8	" "
	Pot126	—	—	2.51	749	7.76	91.0	32.8	" "
	Pot121	—	—	4.74	757	7.77	95.7	32.5	" "
	Pot124	QC100	—	6.04	736	7.97	100.1	31.5	" "
	SW016	Q3	—	3.71	210.9	7.79	76.5	32.3	Brown high turb, No, NS, LF
	SW153		—	4.13	809	8.17	113.5	32.8	Colourless low flow, No, NS, leaf matter
	SW105	—	—	7.54	113.2	7.91	91	34	Brown, highly turb, most flow, No, NS, low flow
	OTH117	—	—	2.10	915	7.83	115.6	44.1	
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Field Filtered:	Unfiltered:	Bottles Collected			QAQC Information	Field Comments
	X	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic		

[redacted]

Checker Name and Signature — Date

Project Manager Signature — Date

Distribution: Project Central File

ANZ

FQM - Groundwater Sampling and Purging Record

AECOM

Q4AN(EV)-405-FM1

Project Name:	PFASOMP	Project Number:	60676801	PM Name:	[redacted]
Client:	DoD	Project Location:	Katherine	Fieldwork Staff:	

Surface Water/Groundwater:

Well Development or Well Sampling Event? (circle)

Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	☐ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☐ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Date	Location ID	QAQC	Turbidity (NTU)	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
14/01/25	Pot130	QC101	—	5.04	747	7.74	110.6	29.9	Colourless, No, NS, low turb.
	Pot131	—	—						
	Pot120	—	—	6.14	654	7.68	120.6	27.1	" "
	Pot198	QC102	—	4.32	745	7.64	124.3	28.7	" "
	Pot201	—	—	1.93	725	7.66	125.2	27.2	" "
	Pot124	—	—	2.72	768	7.59	128.4	30.7	" "
	Pot114	—	—	1.68	722	7.67	128.8	28.7	" "
	Pot127	—	—	1.48	704	7.71	122.4	28.6	" "
	OTH118	—	—	3.02	752	7.53	126.1	30.6	" "
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Field Filtered:	Unfiltered:	Bottle Collected			Field Comments
	✓	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)	Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic	

[redacted]

Checker Name and Signature — Date

Project Manager Signature — Date — Distribution: Project Central File

Cossack Sampling

AECOM

ANZ

FQM - Groundwater Sampling and Purging Record

Q4AN(EV)-405-FM1

Project Name:	PFASomp	Project Number:	60676801	PM Name:	[redacted]	Surface Water/Groundwater:	D
Client:	Defence	Project Location:	TDL	Fieldwork Staff:	[redacted]	Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	" Decontaminated	" Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	" Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	" Disposable	" Bailer " Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	" Other (specify)	" Peristaltic Pump " Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: " Downhole		" Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	" Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Location ID	Date	Time	QA/QC	Turbidity (NTU) SWL	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
SW016	15/1/25	15:00	SW016-QC100/200		3.22	223.7	8.06	93.1	35.9	brown, high turb, NO, NS, No flow
POT131	16/01/25	0940			4.86	509.0	7.32	113.2	27.4	Colourless, low turb, NO, NS
MW808	↓	0945		10.816	0.90	1006	7.38	2.6	30.8	light brown, mod turb, Sulfuric odour, NS
MW809		0953		17.533	1.35	838	7.35	111.0	32.9	colourless/pale brown, mod turb, NO, NS
MW810		1010		19.900	0.70	1052	7.36	104.1	31.9	Colourless, low turb, NO, NS
MW811		1053								DRY
MW812		1105		14.005	1.22	952	7.40	110.8	31.4	Colourless, bubbles, low turb, NO, NS
MW813	✓	1116		13.988	0.80	923	7.45	112.4	31.5	Colourless, low turb, NO, NS EC = 923
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C		± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected			QA/QC Information	Field Commets
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic		QC100 QC200 } SW016_03

[redacted]

Signature Date Checker Name and Signature Date

[redacted]

Project Manager Signature Date

Distribution: Project Central File

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Sampling round: PP **Location: Katherine** **Project number & name: PFASOMP 60676801**

PM: [redacted] **Field staff:** [redacted] **Client:** **Department of Defence**

Date	YSI #	Temp (°C)	pH 4		pH 7		DO (100%)		EC 1413 (µS/cm)		ORP (mV)		Initials
			Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	Pre-cal	Post-cal	[redacted]
13/01/2025	B	28.2	4.06	4.01	7.03	7.01	100	-	1443	1424	26.2	-	
14/01/2025	B	29.1	4.02	-	7.02	-	100	-	1430	1420	26.4	-	
16/01/2025	B	29.3	4.02	-	7.02	-	100		1426	1413	26.3	-	
							100						
							100						
							100						
							100						
							100						
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							100						
							100						

Notes:

OMP SW 4.12

ANZ

FQM - Groundwater Sampling and Purging Record

AECOM

Q4AN(EV)-405-FM1

Project Name:	UMAP OMP	Project Number:	60676801	PM Name:	[redacted]	Surface Water/Groundwater:	SW
Client:	Defence	Project Location:	0940	Fieldwork Staff:		Well Development or Well Sampling Event? (circle)	

General Bore Information		Parameter Info.	Decontamination	Sampling Method	Hydrasleeve Info.	
Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	☐ Dedicated	Intake depth:	Hydrasleeve Type:	
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Gauging
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve Install time:	Hydrasleeve in
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Hydrasleeve out
	Key Type (if applicable):	☐ Retrieved				Parameters
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Water Quality Parameters

Location ID	Date	Time	QA/QC	Turbidity (NTU)	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
SW140	4.12		–		1.03	425.2	5.94	27.3	34.0	No od, Brown, turbid, no sheen, low flow
SW049	↓		–		0.85	208.6	6.88	-23.1	34.1	"
SW188	↓		–	–	1.16	181.3	8.02	7.5	33.1	"
SW021	↓		100/200		0.91	224.9	6.81	-22.3	34.2	
SW350	↓		–		0.74	183.0	7.13	-37.3	34.6	No od, slightly turbid, clear, no sheen, low flow.
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C		± 10% turbidity (if using a turbidity meter)

Analytes Sampled for:		Bottles Collected			QA/QC Information	Field Commets
Field Filtered:	Unfiltered:	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)		Bore volume calculation, bore condition, fate of tubing, redox correction etc.
		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic		

[redacted]

Checker Name and Signature Date

Project Manager Signature Date

Distribution: Project Central File

Autosampler Δ PP

ANZ

FQM - Groundwater Sampling and Purging Record

AECOM

Q4AN(EV)-405-FM1

Project Name:	PFASamp	Project Number:	60676801	PM Name:	[redacted]
Client:	PoD	Project Location:	Tindal	Fieldwork Staff:	

Surface Water/Groundwater:

Well Development or Well Sampling Event? (circle)

Date of GW Level:	Bore Radius (mm):	Chem Kit Serial No.:	☐ Decontaminated	☐ Low Flow Pump rate:	Hydrasleeve Size:	Monitoring sequence followed (number in order):
Depth to GW (m-pvc):	Screen Interval (m):	Chem Kit Model:	☐ Dedicated	Intake depth:	Hydrasleeve Type:	Gauging
Bore Depth (m-pvc):	Casing Radius (mm):	Corrected Redox: Y / N	☐ Disposable	☐ Bailer ☐ Hydrasleeve	Sampling Depth (m-pvc):	Hydrasleeve in
Depth to Product (m-pvc):	Cover Type (gatic/stick up):	(The correction to apply is probe dependent)	☐ Other (specify)	☐ Peristaltic Pump ☐ Waterra	Hydrasleeve install time:	Hydrasleeve out
Product Thickness (m):	Bore Locked (YES/NO):	Parameter method: ☐ Downhole		☐ Other (specify)	Sampling Start Time:	Parameters
	Key Type (if applicable):	☐ Retrieved				
Calculated bore volume (L):	Includes/ excludes bore annulus (circle)	# purge volumes removed:		Total purged volume (L):		

Date	Location ID	QAQC	Turbidity (NTU)	DO (ppm or mg/L)	E.C. (mS/cm or µS/cm)	pH	Redox (mV)	Temp °C	Odour, Colour, Turbidity
13.01.25	Pot112	—	—	2.58	850	7.59	60.8	33.4	Colourless, No, NS
	Pot113	—	—	1.77	894	7.78	50.7	31.7	" " "
	Pot128	—	—	2.59	787	7.84	53.6	31.5	" "
	Pot129	—	—	6.31	736	7.86	57.0	30.5	" "
	OTH119	—	—	3.70	957	7.60	88.4	35.8	" "
	Pot126	—	—	2.51	749	7.76	91.0	32.8	" "
	Pot121	—	—	4.74	757	7.77	95.7	32.5	" "
	Pot124	QC100	—	6.04	736	7.97	100.1	31.5	" "
	Sw016	Q3	—	3.71	210.9	7.79	76.5	32.3	Brown high turb No NS LF
	Sw153		—	4.13	809	8.17	113.5	32.8	Colourless low flow No NS leaf matter, low turb
	Sw108	—	—	7.54	113.2	7.91	91	34	Brown highly turb, mod flow, No, NS
	OTH117	—	—	2.10	915	7.83	115.6	44.1	
Acceptable Parameter Range:				± 10%	± 3%	± 0.05	± 10 mV	± 0.2 °C	± 10% turbidity (if using a turbidity meter)

Field Filtered:	Unfiltered:			
	X	x 40 mL Vial (HCl)	x 60 mL Ferrous	x 60 mL metals (HNO_3)
		x 40 mL Vial (H_2SO_4)	x 100 mL Amber	x 250 mL Plastic

Field Comments: Bore volume calculation, bore condition, fate of tubing, redox correction etc.

[redacted]

Checker Name and Signature

Date

Date

Distribution: Project Central File

DRAFT

Appendix D

Data Validation Report

AECOM

DATA VALIDATION REPORT; WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801	**Date:**	10/12/2024
Site:	0990 – RAAF Tindal		
Matrix:	Water	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney; ALS Brisbane	**Date:**	10/12/2024
Lab reference:	Delayed October 2024 GME: ES2436478, ES2436471 November 2024 Private Property: ES2437021, ES2436902, ES2436904, ES2436906, ES2436908, ES2436909, ES2436912, ES2436913, ES2436914, ES2436915, ES2436916, ES2436917, ES2436919, ES2436920, ES2436921, ES2436922, ES2436923, ES2436924, ES2436926, ES2436927, ES2436928, EB2440154		

Key Findings:

The analytical data can be used as a basis for interpretation, subject to the limitations outlined below:

- The potential exists for concentrations of PFOS to be below the LOR, but above the PFAS Freshwater 99% Species Protection guideline in all groundwater (with the exception of groundwater samples 0990_OTH113_241107, 0990_POT112_241111, 0990_POT113_241111, 0990_POT120_241112, 0990_POT121_241112 and 0990_POT129_241111 which reported above the LOR and adopted guideline), and should be taken into consideration when interpreting results.
- Elevated RPDs for PFHxS should be taken into consideration when using the data from batch ES2436471 quantitatively.

Note: The November 2024 groundwater monitoring events were completed in conjunction with an ad-hoc groundwater sampling event which has been reported separately. Parent samples for the field intra-laboratory and inter-laboratory duplicates may reflect these ad-hoc locations. The data validation has been assessed as an all-inclusive event.

Component		Outliers			Material impact on interpretation
		No	Yes	Comment	
Frequency of field quality assurance/quality control		✓			No
Number of tests requested/reported		✓			No
Sample handling/preservation/holding times			✓	1	No
Frequency of laboratory QA/QC			✓	2	No
Limits of reporting (LOR)			✓	3	No
Blank analysis	Field blank	✓	✓	4	No
	Rinsate blank	✓			No
	Trip blank	✓	✓	5	No
	Method blank	✓			No
Field intra-laboratory relative percent differences (RPDs)		✓			No
Field inter-laboratory RPDs			✓	6	No
Laboratory duplicate RPDs		✓			No
Matrix spike (MS) % recoveries		✓			No
Laboratory control spike (LCS) % recoveries		✓			No
Surrogate % recoveries		✓			No
Other comments		✓			No

Comments

DATA VALIDATION REPORT; WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801	**Date:**	10/12/2024
Site:	0990 – RAAF Tindal		
Matrix:	Water	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney; ALS Brisbane	**Date:**	10/12/2024
Lab reference:	Delayed October 2024 GME: ES2436478, ES2436471 November 2024 Private Property: ES2437021, ES2436902, ES2436904, ES2436906, ES2436908, ES2436909, ES2436912, ES2436913, ES2436914, ES2436915, ES2436916, ES2436917, ES2436919, ES2436920, ES2436921, ES2436922, ES2436923, ES2436924, ES2436926, ES2436927, ES2436928, EB2440154		

1. Sample handling/ preservation/ holding times

Sample Preservation

The following laboratory batches were received outside of the recommended temperature range (≤6°C). Noting where multiple temperatures were recorded by the laboratory, the average temperature was calculated:

Batch Number	Temperature (°C)
ES2436478	15.2
ES2436471	15.2

Potential under reporting must be taken into consideration for the above noted batches. However, the potential for under reporting is not considered to materially affect the interpretation of results due to the nature of PFAS not degrading via volatilisation. Further, the samples were received below the ambient groundwater temperature at the time of sampling (~30 °C) and the samples were immediately cooled upon collection.

2. Frequency of laboratory QA/QC

Laboratory duplicate samples were not reported for PFAS in all primary batches, excluding ES2436902, ES2436904, ES2436906, ES2436908, ES2436909, ES2436912, ES2436913, ES2436914, ES2436915, ES2436916, ES2436917 and ES2436919. The precision of the data can be assessed as acceptable based on the available field intra- and inter-laboratory duplicate RPDs which were reported at the required frequencies and generally within control limits.

Matrix spikes were not reported for PFAS method group in all primary batches, excluding ES2436902, ES2436904, ES2436906, ES2436908, ES2436909, ES2436912, ES2436913, ES2436914, ES2436915, ES2436916, ES2436917 and ES2436919. The accuracy of the data can be assessed as acceptable based on method blanks, LCS and surrogate spike recoveries (which were reported at the required frequencies and within control limits)..

DATA VALIDATION REPORT; WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801	**Date:**	10/12/2024
Site:	0990 – RAAF Tindal		
Matrix:	Water	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney; ALS Brisbane	**Date:**	10/12/2024
Lab reference:	Delayed October 2024 GME: ES2436478, ES2436471 November 2024 Private Property: ES2437021, ES2436902, ES2436904, ES2436906, ES2436908, ES2436909, ES2436912, ES2436913, ES2436914, ES2436915, ES2436916, ES2436917, ES2436919, ES2436920, ES2436921, ES2436922, ES2436923, ES2436924, ES2436926, ES2436927, ES2436928, EB2440154		

3.Limits of reporting	Limits of reporting (LOR) were sufficiently low to enable assessment against adopted guideline criteria, with the exception of PFOS in water. The potential exists for PFOS to be above the adopted PFAS Freshwater 99% Species Protection guideline (0.00023 µg/L), but below the laboratory LOR (0.01 µg/L) in all groundwater primary samples collected, excluding the following samples that reported above the LOR and the guideline value • 0990_OTH113_241107 • 0990_POT112_241111 • 0990_POT113_241111 • 0990_POT120_241112 • 0990_POT121_241112 • 0990_POT129_241111 This should be taken into consideration when interpreting PFOS results against guidelines where results are reported below the LOR.
4. Field Blank	A field blank was collected per day but not analysed by the laboratory due to a COC transcript error. As all rinsate samples were collected and analysed at the required frequencies, and reported concentrations of all contaminatsbelow the limits of reporting, cross contamination via sample handling is considered unlikely..
5.Trip Blank	A trip blank per cooler was collected but not analysed by the laboratory due to a COC transcript error. As the available rinsate blank samples reported concentrations of all contaminates below the LOR, cross contamination via volatilisation during transport to the laboratory is assessed to not have occurred.
6. Field inter-laboratory RPDs	Field inter-laboratory RPDs were reported within control limits, with the exception of the following (higher concentration in **bold**): • 0990_OTH113_241107 & **0990_QC200_241107** for PFHxS (32%) As all concentrations of PFHxS in laboratory batch ES2436471 reported well above or well below the selected criteria , the elevated RPDis not expected to affect the interpretation of results against the slectedcriteria. However, this should be taken into consideration when using the data quantitatively.

Client Name: Department of Defence
Project Name: PFAS Ongoing Monitoring Plan

Data Validation Report - QAQC Blanks

					Per- and Poly-fluoroalkyl Substances																	
					Perfluorooctanoic Acid (PFOA)	Perfluorooctane sulfonate (PFOS)	Perfluorohexane sulfonate (PFHxS)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluoroundecanoic acid (PFUnDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorononanoic acid (PFNA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorododecanoic acid (PFDoDA)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.01	0.01	0.01	0.05	0.05	0.05	0.05	0.02	0.02	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Field ID	**Date**	**Matrix Type**	**Lab Report Number**	**Sample Type**																		
0990_QC300_241107	**07 Nov 2024**	**Water**	**ES2436478**	**Rinsate**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC300_241111	**11 Nov 2024**	**Water**	**ES2437021**	**Rinsate**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
0990_QC301_241112	**12 Nov 2024**	**Water**	**ES2437021**	**Rinsate**	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Data Validation Report - QAQC Blanks

					Perfluorodecanoic acid (PFDA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	Perfluorooctane sulfonamide (FOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	Sum of PFHxS and PFOS	Sum of PFAS	Sum of PFAS (WA DER List)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.02	0.02	0.1	0.05	0.05	0.05	0.05	0.02	0.02	0.02	0.01	0.01	0.01
Field ID	**Date**	**Matrix Type**	**Lab Report Number**	**Sample Type**													
0990_QC300_241107	**07 Nov 2024**	**Water**	**ES2436478**	**Rinsate**	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01
0990_QC300_241111	**11 Nov 2024**	**Water**	**ES2437021**	**Rinsate**	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	-
0990_QC301_241112	**12 Nov 2024**	**Water**	**ES2437021**	**Rinsate**	<0.02	<0.02	<0.1	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	-

Data Validation Report - RPD Tables

		Field ID	0990_OTH113_241107	0990_QC100_241107		0990_OTH113_241107	0090_QC200_241107		0990_OTH119_241111	0990_QC100_241111
		Date	07 Nov 2024	07 Nov 2024		07 Nov 2024	07 Nov 2024		11 Nov 2024	11 Nov 2024
		Matrix Type	Water	Water		Water	Water		Water	Water
		Lab Report Number	ES2436471	ES2436478		ES2436471	EB2439270		ES2436922	ES2437021
		Sample Type	Primary	Intra-lab Duplicate	RPD	Primary	Inter-lab Duplicate	RPD	Primary	Intra-lab Duplicate
	Unit	LOR								
Per- and Poly-fluoroalkyl Substances										
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01
Perfluorooctane sulfonate (PFOS)	µg/L	0.01	0.11	0.10	10	0.11	0.14	24	<0.01	<0.01
Perfluorohexane sulfonate (PFHxS)	µg/L	0.01	0.08	0.08	0	0.08	0.11	**32**	<0.01	<0.01
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02	0	<0.02	0.02	0	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	0	<0.02	0.02	0	<0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02

****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each LOR multiplier range are: 30 (1 - 10 x LOR); 30 (10 - 30 x LOR); 30 (> 30 x LOR))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

Data Validation Report - RPD Tables

			0990_OTH119_241111	0990_QC200_241111		0990_OTH118_241112	0990_QC101_241112		0990_OTH118_241112	0990_QC201_241111	
			11 Nov 2024	11 Nov 2024		12 Nov 2024	12 Nov 2024		12 Nov 2024	11 Nov 2024	
			Water	Water		Water	Water		Water	Water	
			ES2436922	EB2440154		ES2436912	ES2437021		ES2436912	EB2440154	
		RPD	Primary	Inter-lab Duplicate	RPD	Primary	Intra-lab Duplicate	RPD	Primary	Inter-lab Duplicate	RPD
	Unit										
Per- and Poly-fluoroalkyl Substances											
Perfluorooctanoic Acid (PFOA)	**µg/L**	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorooctane sulfonate (PFOS)	**µg/L**	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorohexane sulfonate (PFHxS)	**µg/L**	0	<0.01	<0.01	0	<0.01	<0.01	0	<0.01	<0.01	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	**µg/L**	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	**µg/L**	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	**µg/L**	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	**µg/L**	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
Perfluoroundecanoic acid (PFUnDA)	**µg/L**	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorotridecanoic acid (PFTrDA)	**µg/L**	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	**µg/L**	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
Perfluoropentane sulfonic acid (PFPeS)	**µg/L**	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoropentanoic acid (PFPeA)	**µg/L**	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorononanoic acid (PFNA)	**µg/L**	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorohexanoic acid (PFHxA)	**µg/L**	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoroheptane sulfonic acid (PFHpS)	**µg/L**	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluoroheptanoic acid (PFHpA)	**µg/L**	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorodecane sulfonic acid (PFDS)	**µg/L**	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorododecanoic acid (PFDoDA)	**µg/L**	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorodecanoic acid (PFDA)	**µg/L**	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorobutane sulfonic acid (PFBS)	**µg/L**	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorobutanoic acid (PFBA)	**µg/L**	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	**µg/L**	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	**µg/L**	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	**µg/L**	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	**µg/L**	0	<0.05	<0.05	0	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	**µg/L**	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorooctane sulfonamide (FOSA)	**µg/L**	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	**µg/L**	0	<0.02	<0.02	0	<0.02	<0.02	0	<0.02	<0.02	0

DATA VALIDATION REPORT – WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801 – PFASOMP	**Date:**	11/02/2025
Site:	0990 – RAAF Base Tindal		
Matrix:	Water (24 primary samples)	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney & NMI (Secondary laboratory)	**Date:**	11/02/2025
Lab reference:	ES2439696, ES2440543, RN1450878*, RN1451184* (*secondary laboratory)		

Key Findings:

The groundwater and surface water analytical data can be used as a basis for interpretation, subject to the limitations outlined below:

- The potential exists for PFOS to be above the adopted PFAS Freshwater 99% Species Protection guideline (0.00023 µg/L), but below the laboratory LOR (0.01 µg/L) in 9 out of 18 primary water samples in primary lab batch ES2440543..

Component		Outliers			Material impact on interpretation
		No	Yes	Comment	
Frequency of field quality assurance/quality control (QAQC)		✓			No
Number of tests requested/reported		✓			No
Sample handling/preservation/holding times			✓	1	No
Frequency of laboratory QA/QC			✓	2	No
Limits of reporting (LOR)			✓	3	No
Blank analysis	Field blank	✓			No
	Rinsate blank	✓			No
	Trip blank	✓			No
	Method blank	✓			No
Field inter- and intra-laboratory relative percent differences (RPDs)		✓			No
Laboratory duplicate RPDs		✓			No
Matrix spike (MS) % recoveries			✓	4	No
Laboratory control spike (LCS) % recoveries		✓			No
Surrogate % recoveries		✓			No
Other observations		✓			No

Comments

1. Sample handling/preservation/holding times

Laboratory batches were received above of the APHA/NEPM recommended temperature range (≤6°C) for the water samples:

Batch Number	Temperature (°C)
ES2439696	19.7°C, 20.7°C and 18.4°C
ES2440543	13.8°C, 10.3°C and 14.5 °C

The potential for under reporting is not considered to materially affect the interpretation of results due to the nature of PFAS not degrading via volatilisation. Further, the samples were received below the ambient groundwater and surface water temperature at the time of sampling (~30 °C) and the samples were immediately cooled upon collection minimising potential impacts to data quality. Primary samples showed good reproducibility with the secondary laboratory results.

DATA VALIDATION REPORT – WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801 – PFASOMP	**Date:**	11/02/2025
Site:	0990 – RAAF Base Tindal		
Matrix:	Water (24 primary samples)	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney & NMI (Secondary laboratory)	**Date:**	11/02/2025
Lab reference:	ES2439696, ES2440543, RN1450878*, RN1451184* (*secondary laboratory)		

2. Frequency of Laboratory QA/QC	Laboratory duplicate samples were not reported for at the required frequency for PFAS in primary lab batch ES2439696 (2.78/10%) and ES2440543 (0/10%). The precision of the data can be assessed as acceptable based on intra- and inter-laboratory duplicate RPDs which were generally reported at the required frequencies and within control limits. Matrix spikes were not reported at the required frequency for PFAS in primary lab batch ES2439696 (2.78/5%) and ES2440543 (0/5%). The accuracy of the data can be assessed as acceptable based on method blanks, LCS and surrogate spike recoveries (which were reported at the required frequencies and within control limits), and available matrix spike recoveries for the same analytical method group (which were reported within control limits).
3. Limit of Reporting	Limits of reporting (LOR) were sufficiently low to enable assessment against adopted guideline criteria, with the exception of PFOS in water in primary lab batch ES2440543. The potential exists for PFOS to be above the adopted PFAS Freshwater 99% Species Protection guideline (0.00023 µg/L), but below the laboratory LOR (0.01 µg/L) in all groundwater primary samples collected, excluding the following samples in primary lab batch ES2440543, that have reported above the LOR and the guideline value: • 0990_OTH118_241211 • 0990_POT114_241211 • 0990_POT125_241209 • 0990_POT126_241209 • 0990_POT127_241211 • 0990_POT130_241211 • 0990_POT131_241209 • 0990_POT198_241211 • 0990_POT201_241211 This should be taken into consideration when interpreting PFOS results against guidelines where results are reported below the LOR.

DATA VALIDATION REPORT – WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801 – PFASOMP	**Date:**	11/02/2025
Site:	0990 – RAAF Base Tindal		
Matrix:	Water (24 primary samples)	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney & NMI (Secondary laboratory)	**Date:**	11/02/2025
Lab reference:	ES2439696, ES2440543, RN1450878*, RN1451184* (*secondary laboratory)		

4. Matrix spike (MS) % recoveries	Matrix spike recoveries (where reported) were within control limits with the exception of anonymous sample in primary lab batch ES2440543. Matrix spike recoveries were not determined for the following as analytes as background levels were greater than or equal to 4x spike levels; • Perfluorobutane sulfonic acid (PFBS) • Perfluoropenane sulfonic acid (PFPeS) • Perfluorohexane sulfonic acid (PFHxS) • Perfluorooctane sulfnonic acid (PFOS) • Perfluoropenanoic acid (PFPeA) • Perfluorohexanoic acid (PFHxA) These non-determinations do not reflect method bias and do not affect data interpretation. The accuracy of the data can be assessed as acceptable based on method blanks, LCS and surrogate spike recoveries (which were reported at the required frequencies and within control limits), and available matrix spike recoveries for the same analytical method group (which were reported within control limits).

Client Name: Department of Defence
Project Name: PFAS Ongoing Monitoring Plan

QAQC Blanks

				PFAS Full Suite															
				10:2 Fluorotelomer sulfonic acid (10:2 FTS)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptane sulfonic acid (PFHpS)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR				0.05	0.05	0.05	0.05	0.05	0.02	0.05	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02	0.02
Field ID	**Date**	**Sample Type**	**Lab Report**																
0990_QC303_241205	**04 Dec 2024**	**Rinsate**	**ES2439696**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02	<0.02

Client Name: Department of Defence
Project Name: PFAS Ongoing Monitoring Plan

QAQC Blanks

					PFAS Full Suite												
				Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonamide (FOSA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorononane sulfonate (PFNS)	Perfluorooctane sulfonic acid (PFOS)	Perfluoropropanesulfonic acid (PFPrS)	Perfluorooctanoic Acid (PFOA)	Perfluorohexane sulfonic acid (PFHxS)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
LOR				0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.00002	0.01	0.02	0.01	0.01
Field ID	**Date**	**Sample Type**	**Lab Report**														
0990_QC303_241205	**04 Dec 2024**	**Rinsate**	**ES2439696**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.00002	<0.01	<0.02	<0.01	<0.01

Client Name: Department of Defence
Project Name: PFAS Ongoing Monitoring Plan

QAQC Blanks

				PFAS Full Suite														
				10:2 Fluorotelomer sulfonic acid (10:2 FTS)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoDA)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR				0.05	0.05	0.05	0.05	0.05	0.02	0.05	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02
Field ID	**Date**	**Sample Type**	**Lab Report**															
0990_QC300_241209	**09 Dec 2024**	**Rinsate**	**ES2440543**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02
0990_QC301_241211	**11 Dec 2024**	**Rinsate**	**ES2440543**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02
0990_QC400_241209	**09 Dec 2024**	**Field Blank**	**ES2440543**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02
0990_QC401_241211	**11 Dec 2024**	**Field Blank**	**ES2440543**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02
0990_QC500_241209	**09 Dec 2024**	**Trip Blank**	**ES2440543**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02

Client Name: Department of Defence
Project Name: PFAS Ongoing Monitoring Plan

QAQC Blanks

				PFAS Full Suite												
				Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonamide (FOSA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Perfluorohexane sulfonic acid (PFHxS)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR				0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.01	0.01	0.01
Field ID	**Date**	**Sample Type**	**Lab Report**													
0990_QC300_241209	**09 Dec 2024**	**Rinsate**	**ES2440543**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01
0990_QC301_241211	**11 Dec 2024**	**Rinsate**	**ES2440543**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01
0990_QC400_241209	**09 Dec 2024**	**Field Blank**	**ES2440543**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01
0990_QC401_241211	**11 Dec 2024**	**Field Blank**	**ES2440543**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01
0990_QC500_241209	**09 Dec 2024**	**Trip Blank**	**ES2440543**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01

Client Name: Department of Defence
Project Name: PFAS Ongoing Monitoring Plan

Relative Percentage Difference

		Location Code	SW021			SW021		
		Field ID	0990_SW021_241205	0990_QC103_241205		0990_SW021_241205	0990_QC203_241204	
		Date	04 Dec 2024	04 Dec 2024		04 Dec 2024	04 Dec 2024	
		Matrix Type	Water	Water		Water	Water	
		Sample Type	Normal	Field_D		Normal	Interlab_D	
		Lab Report Number	ES2439696	ES2439696	RPD	ES2439696	RN1450878	RPD
	Unit	LOR						
Per- and Poly-fluoroalkyl Substances								
Perfluorooctanoic Acid (PFOA)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorooctane sulfonate (PFOS)	µg/L	0.01	0.22	0.22	0	0.22	0.27	20
Perfluorohexane sulfonate (PFHxS)	µg/L	0.01	0.04	0.04	0	0.04	0.049	20
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.01	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.01	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.02	0
Perfluoropropanesulfonic acid (PFPrS)	µg/L	0.02	<0.02	<0.02	0	<0.02	-	-
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.02	0
Perfluorooctadecanoic Acid (PFODA)	µg/L		-	-	-	-	<0.05	-
Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorononanesulfonic acid (PFNS)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorohexadecanoic acid (PFHxDA)	µg/L		-	-	-	-	<0.02	-
Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	0	<0.02	0.011	0
Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	0	<0.1	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.02	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.02	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.01	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.01	0

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 30 (1 - 10 x EQL); 30 (10 - 30 x EQL); 30 (> 30 x EQL))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

Client Name: Department of Defence
Project Name: PFAS Ongoing Monitoring Plan

Relative Percentage Difference

		Location Code	POT125			POT125			POT198			POT198		
		Field ID	0990_POT125_241209	0990_QC100_241209		0990_POT125_241209	0990_QC200_241209		0990_POT198_241211	0990_QC101_241211		0990_POT198_241211	0990_QC201_241211	
		Date	09 Dec 2024	09 Dec 2024		09 Dec 2024	09 Dec 2024		11 Dec 2024	11 Dec 2024		11 Dec 2024	11 Dec 2024	
		Matrix Type	Water	Water		Water	Water		Water	Water		Water	Water	
		Sample Type	Normal	Field_D		Normal	Interlab_D		Normal	Field_D		Normal	Interlab_D	
		Lab Report Number	ES2440543	ES2440543	RPD	ES2440543	RN1451184	RPD	ES2440543	ES2440543	RPD	ES2440543	RN1451184	RPD
	Unit	LOR												
Per- and Poly-fluoroalkyl Substances														
Perfluorooctanoic Acid (PFOA)	µg/L	0.002	<0.002	<0.01	0	<0.002	<0.01[#1]	0	<0.002	<0.01	0	<0.002	<0.01[#1]	0
Perfluorooctane sulfonate (PFOS)	µg/L	0.002	<0.002	<0.01	0	<0.002	<0.02[#1]	0	<0.002	<0.01	0	<0.002	<0.02[#1]	0
Perfluorohexane sulfonate (PFHxS)	µg/L	0.002	<0.002	<0.01	0	<0.002	<0.01[#1]	0	<0.002	<0.01	0	<0.002	<0.01[#1]	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.01[#1]	0	<0.005	<0.05	0	<0.005	<0.01[#1]	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.005	0.013	<0.05	0	0.013	<0.01[#1]	26	<0.005	<0.05	0	<0.005	<0.01[#1]	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.01[#1]	0	<0.005	<0.05	0	<0.005	<0.01[#1]	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.01[#1]	0	<0.005	<0.05	0	<0.005	<0.01[#1]	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01[#1]	0	<0.002	<0.02	0	<0.002	<0.01[#1]	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.02[#1]	0	<0.002	<0.02	0	<0.002	<0.02[#1]	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.02[#1]	0	<0.005	<0.05	0	<0.005	<0.02[#1]	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01[#1]	0	<0.002	<0.02	0	<0.002	<0.01[#1]	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.02[#1]	0	<0.002	<0.02	0	<0.002	<0.02[#1]	0
Perfluorooctadecanoic Acid (PFODA)	µg/L	0.05	-	-	-	-	<0.05[#1]	-	-	-	-	-	<0.05[#1]	-
Perfluorononanoic acid (PFNA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01[#1]	0	<0.002	<0.02	0	<0.002	<0.01[#1]	0
Perfluorononanesulfonic acid (PFNS)	µg/L	0.01	-	-	-	-	<0.01[#1]	-	-	-	-	-	<0.01[#1]	-
Perfluorohexadecanoic acid (PFHxDA)	µg/L	0.005	<0.005	-	-	<0.005	<0.02[#1]	0	<0.005	-	-	<0.005	<0.02[#1]	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01[#1]	0	<0.002	<0.02	0	<0.002	<0.01[#1]	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01[#1]	0	<0.002	<0.02	0	<0.002	<0.01[#1]	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01[#1]	0	<0.002	<0.02	0	<0.002	<0.01[#1]	0
Perfluorodecane sulfonic acid (PFDS)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01[#1]	0	<0.002	<0.02	0	<0.002	<0.01[#1]	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01[#1]	0	<0.002	<0.02	0	<0.002	<0.01[#1]	0
Perfluorodecanoic acid (PFDA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01[#1]	0	<0.002	<0.02	0	<0.002	<0.01[#1]	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01[#1]	0	<0.002	<0.02	0	<0.002	<0.01[#1]	0
Perfluorobutanoic acid (PFBA)	µg/L	0.01	<0.01	<0.1	0	<0.01	<0.05[#1]	0	<0.01	<0.1	0	<0.01	<0.05[#1]	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.02[#1]	0	<0.005	<0.05	0	<0.005	<0.02[#1]	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.05[#1]	0	<0.005	<0.05	0	<0.005	<0.05[#1]	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.02[#1]	0	<0.005	<0.05	0	<0.005	<0.02[#1]	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.05[#1]	0	<0.005	<0.05	0	<0.005	<0.05[#1]	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01[#1]	0	<0.002	<0.02	0	<0.002	<0.01[#1]	0
Perfluorooctane sulfonamide (FOSA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01[#1]	0	<0.002	<0.02	0	<0.002	<0.01[#1]	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01[#1]	0	<0.002	<0.02	0	<0.002	<0.01[#1]	0

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 30 (1 - 10 x EQL); 30 (10 - 30 x EQL); 30 (> 30 x EQL))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

AECOM

DATA VALIDATION REPORT – WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801 – PFASOMP	**Date:**	06/02/2025
Site:	0990 – RAAF Base Tindal		
Matrix:	Water	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney & NMI Sydney	**Date:**	10/02/2025
Lab reference:	ES2501556, RN1454300		

Key Findings:

The analytical data can be used as a basis for interpretation, subject to the limitations outlined below:

- The potential exists for concentrations of PFOS to be below the LOR, but above the PFAS Freshwater 99% Species Protection guideline in 9 of 25 primary samples.

Component		Outliers			Material impact on interpretation
		No	Yes	Comment	
Frequency of field quality assurance/quality control (QAQC)			✓	1	No
Number of tests requested/reported		✓			No
Sample handling/preservation/holding times			✓	2	No
Frequency of laboratory QA/QC			✓	3	No
Limits of reporting (LOR)			✓	4	No
Blank analysis	Field blank	✓			No
	Rinsate blank	✓			No
	Trip blank	✓			No
	Method blank	✓			No
Field inter- and intra-laboratory relative percent differences (RPDs)			✓	5	No
Laboratory duplicate RPDs		✓			No
Matrix spike (MS) % recoveries		✓			No
Laboratory control spike (LCS) % recoveries		✓			No
Surrogate % recoveries		✓			No
Other observations		✓			No

Comments

1. Frequency of field quality assurance/quality control (QAQC)	As per project specifications, rinsate blank and field blank samples were to be analysed at a frequency of one per day per re-usable equipment for rinsates and one per day for field blanks, with the exception of 16 January 2025. The decontamination methods for the 16 January are assessed as acceptable and the potential for cross-contamination via sampling methods is considered unlikely based on the following: • All sampling equipment was either dedicated, disposable or decontaminated with a solution of water and Liquinox between sampling locations. • Dedicated sample bottles and clean disposable gloves were used to collect each sample. • The decontamination methods and field staff were consistent over the course of the sampling event. Furthermore, some samples collected on the 16 January 2025 reported below LOR for PFAS compounds and therefore the likelihood of cross-contamination via air (fieldblank) or re-usable sampling equipment (rinsate) is considered unlikely.

DATA VALIDATION REPORT – WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801 – PFASOMP	**Date:**	06/02/2025
Site:	0990 – RAAF Base Tindal		
Matrix:	Water	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney & NMI Sydney	**Date:**	10/02/2025
Lab reference:	ES2501556, RN1454300		

2. Sample handling/preservation/holding times	**Sample Preservation:** Laboratory batches were received above of the APHA/NEPM recommended temperature range (≤6°C) for the water samples: Batch Number: Temperature (°C) ES2501556: 18.8°C, 22.8°C and 19.2°C RN1454300: Chilled Potential under reporting must be taken into consideration. However, the potential for under reporting is not considered to materially affect the interpretation of results due to the nature of PFAS not degrading via volatilisation. Further, the samples were received below the ambient groundwater and surface water temperature at the time of sampling (~30 °C) and the samples were immediately cooled upon collection
3. Frequency of Laboratory QA/QC	Laboratory duplicate samples were not reported for at the required frequency for PFAS in primary lab batch ES2501556. The precision of the data can be assessed as acceptable based on the available laboratory duplicates and the intra- and inter-laboratory duplicate RPDs which were reported at the required frequencies and generally within control limits. Matrix spikes were not reported at the required frequency for PFAS in primary lab batch ES2501556. he accuracy of the data can be assessed as acceptable based on method blanks, LCS and surrogate spike recoveries (which were reported at the required frequencies and within control limits).
4. Limit of Reporting	Limits of reporting (LOR) were sufficiently low to enable assessment against adopted guideline criteria, with the exception of PFOS in water. The potential exists for PFOS to be above the adopted PFAS Freshwater 99% Species Protection guideline (0.00023 µg/L), but below the laboratory LOR (0.01 µg/L) in the following groundwater and surface water primary samples collected: • 0990_MW808_250115 • 0990_MW812_250115 • 0990_MW813_250115 • 0990_POT114_250114 • 0990_POT127_250114 • 0990_POT130_250113 • 0990_POT198_250114 • 0990_POT201_250113 • 0990_SW153_250113 This should be taken into consideration when interpreting PFOS results against guidelines where results are reported below the LOR.

DATA VALIDATION REPORT – WATER

Project Manager:	[redacted]	**Validation by:**	[redacted]
Project number:	60676801 – PFASOMP	**Date:**	06/02/2025
Site:	0990 – RAAF Base Tindal		
Matrix:	Water	**Data Verified by:**	[redacted]
Laboratory:	ALS Sydney & NMI Sydney	**Date:**	10/02/2025
Lab reference:	ES2501556, RN1454300		

5. Field intra-laboratory relative percent differences (RPDs)	Field intra-laboratory RPDs were reported within control limits, except of the following sample (higher concentration in **bold**): • 0990_POT125_250113 & **0990_QC100_250113** for 6:2 Fluorotelomer sulfonic acid (164%) As there are no adopted guidelines for 6:2 Fluorotelomer sulfonic acid (6:2 FTS), the RPD exceedances is not expected to affect the interpretation of results. However, this should be taken into consideration when using 6:2 Fluorotelomer sulfonic acid (6:2 FTS) concentrations quantitatively.

Client Name: Department of Defence
Project Name: PFAS Ongoing Monitoring Plan

QAQC Blanks

				PFAS Full Suite														
				10:2 Fluorotelomer sulfonic acid (10:2 FTS)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecanesulfonic acid (PFDS)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoDA)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR				0.05	0.05	0.05	0.05	0.05	0.02	0.05	0.05	0.02	0.05	0.02	0.1	0.02	0.02	0.02
Field ID	**Date**	**Sample Type**	**Lab Report**															
0990_QC300_250113	**13 Jan 2025**	**Rinsate**	**ES2501556**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02
0990_QC301_250114	**14 Jan 2025**	**Rinsate**	**ES2501556**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02
0990_QC400_250113	**13 Jan 2025**	**Field Blank**	**ES2501556**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02
0990_QC401_250114	**14 Jan 2025**	**Field Blank**	**ES2501556**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02
0990_QC500_250113	**13 Jan 2025**	**Trip Blank**	**ES2501556**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05	<0.02	<0.1	<0.02	<0.02	<0.02

Client Name: Department of Defence
Project Name: PFAS Ongoing Monitoring Plan

QAQC Blanks

				Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonamide (FOSA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic Acid (PFOA)	Perfluorohexane sulfonic acid (PFHxS)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR				0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.02	0.02	0.01	0.01	0.01
Field ID	**Date**	**Sample Type**	**Lab Report**													
0990_QC300_250113	**13 Jan 2025**	**Rinsate**	**ES2501556**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01
0990_QC301_250114	**14 Jan 2025**	**Rinsate**	**ES2501556**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01
0990_QC400_250113	**13 Jan 2025**	**Field Blank**	**ES2501556**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01
0990_QC401_250114	**14 Jan 2025**	**Field Blank**	**ES2501556**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01
0990_QC500_250113	**13 Jan 2025**	**Trip Blank**	**ES2501556**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.01	<0.01	<0.01

Client Name: Department of Defence
Project Name: PFAS Ongoing Monitoring Plan

Relative Percentage Differences

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		Field ID	0990_POT125_250113	0990_QC100_250113		0990_POT125_250113	0990_QC200_250113		0990_POT130_250113	0990_QC101_250114	
		Date	13 Jan 2025	13 Jan 2025		13 Jan 2025	13 Jan 2025		13 Jan 2025	14 Jan 2025	
		Sample Type	Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate		Primary	Intra-lab Duplicate	
		Lab Report Number	ES2501556	ES2501556		ES2501556	RN1454300		ES2501556	ES2501556	
		Location Code	POT125	POT125	RPD	POT125	POT130	RPD	POT130	POT130	RPD
	Unit	LOR									
PFAS Full Suite											
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.01	0	<0.005	<0.05	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.01	0	<0.005	<0.05	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	0.005	0.016	0.16	164	0.016	<0.01	46	<0.005	<0.05	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.01	0	<0.005	<0.05	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.02	0	<0.005	<0.05	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.002	<0.02	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.05	0	<0.005	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.02	0	<0.005	<0.05	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.002	<0.02	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.05	0	<0.005	<0.05	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.002	<0.02	0
Perfluorobutanoic acid (PFBA)	µg/L	0.01	<0.01	<0.1	0	<0.01	<0.05	0	<0.01	<0.1	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.002	<0.02	0
Perfluorodecanoic acid (PFDA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.002	<0.02	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.002	<0.02	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.002	<0.02	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.002	<0.02	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.002	<0.02	0
Perfluorononanoic acid (PFNA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.002	<0.02	0
Perfluorooctadecanoic Acid (PFODA)	µg/L		-	-	-	-	<0.05	-	-	-	-
Perfluorooctane sulfonamide (FOSA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.002	<0.02	0
Perfluoropalmitic acid (PFHxDA)	µg/L	0.005	<0.005	-	-	<0.005	<0.02	0	<0.005	-	-
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.002	<0.02	0
Perfluoropentanoic acid (PFPeA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.02	0	<0.002	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.005	<0.005	<0.05	0	<0.005	<0.02	0	<0.005	<0.05	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.02	0	<0.002	<0.02	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.002	<0.002	<0.02	0	<0.002	<0.01	0	<0.002	<0.02	0
Perfluorononane sulfonate (PFNS)	mg/L		-	-	-	-	<0.00001	-	-	-	-
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.002	0.003	<0.01	0	0.003	<0.02	0	<0.002	<0.01	0
Perfluorooctanoic Acid (PFOA)	µg/L	0.002	<0.002	<0.01	0	<0.002	<0.01	0	<0.002	<0.01	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.002	0.003	<0.01	0	0.003	<0.01	0	0.004	<0.01	0

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 81 (1 - 10 x EQL); 50 (10 - 30 x EQL); 30 (> 30 x EQL))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

Client Name: Department of Defence
Project Name: PFAS Ongoing Monitoring Plan

Relative Percentage Differences

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		0990_POT130_250113	0990_QC201_250114		0990_POT198_250113	0990_QC102_250114		0990_POT198_250113	0990_QC202_250114	
		13 Jan 2025	14 Jan 2025		13 Jan 2025	14 Jan 2025		13 Jan 2025	14 Jan 2025	
		Primary	Inter-lab Duplicate		Primary	Intra-lab Duplicate		Primary	Inter-lab Duplicate	
		ES2501556	RN1454300		ES2501556	ES2501556		ES2501556	RN1454300	
		POT130	POT130	RPD	POT198	POT198	RPD	POT198	POT198	RPD
	Unit									
PFAS Full Suite										
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	<0.005	<0.01	0	<0.005	<0.05	0	<0.005	<0.01	0
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	<0.005	<0.01	0	<0.005	<0.05	0	<0.005	<0.01	0
6:2 Fluorotelomer Sulfonate (6:2 FtS)	µg/L	<0.005	<0.01	0	<0.005	<0.05	0	<0.005	<0.01	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	<0.005	<0.01	0	<0.005	<0.05	0	<0.005	<0.01	0
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	µg/L	<0.005	<0.02	0	<0.005	<0.05	0	<0.005	<0.02	0
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	µg/L	<0.002	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	µg/L	<0.005	<0.05	0	<0.005	<0.05	0	<0.005	<0.05	0
N-Methyl perfluorooctane sulfonamide (MeFOSA)	µg/L	<0.005	<0.02	0	<0.005	<0.05	0	<0.005	<0.02	0
N-Methyl perfluorooctane sulfonamidoacetic acid (MFOSAA)	µg/L	<0.002	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	µg/L	<0.005	<0.05	0	<0.005	<0.05	0	<0.005	<0.05	0
Perfluorobutane sulfonic acid (PFBS)	µg/L	<0.002	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
Perfluorobutanoic acid (PFBA)	µg/L	<0.01	<0.05	0	<0.01	<0.1	0	<0.01	<0.05	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	<0.002	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	<0.002	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	<0.002	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	<0.002	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
Perfluoroheptanoic acid (PFHpA)	µg/L	<0.002	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
Perfluorohexanoic acid (PFHxA)	µg/L	<0.002	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
Perfluorononanoic acid (PFNA)	µg/L	<0.002	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
Perfluorooctadecanoic Acid (PFODA)	µg/L	-	<0.05	-	-	-	-	-	<0.05	-
Perfluorooctane sulfonamide (FOSA)	µg/L	<0.002	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
Perfluoropalmitic acid (PFHxDA)	µg/L	<0.005	<0.02	0	<0.005	-	-	<0.005	<0.02	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	<0.002	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
Perfluoropentanoic acid (PFPeA)	µg/L	<0.002	<0.02	0	<0.002	<0.02	0	<0.002	<0.02	0
Perfluorotetradecanoic acid (PFTeDA)	µg/L	<0.005	<0.02	0	<0.005	<0.05	0	<0.005	<0.02	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	<0.002	<0.02	0	<0.002	<0.02	0	<0.002	<0.02	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	<0.002	<0.01	0	<0.002	<0.02	0	<0.002	<0.01	0
Perfluorononane sulfonate (PFNS)	mg/L	-	<0.00001	-	-	-	-	-	<0.00001	-
Perfluorooctane sulfonic acid (PFOS)	µg/L	<0.002	<0.02	0	<0.002	<0.01	0	<0.002	<0.02	0
Perfluorooctanoic Acid (PFOA)	µg/L	<0.002	<0.01	0	<0.002	<0.01	0	<0.002	<0.01	0
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.004	<0.01	0	0.003	<0.01	0	0.003	<0.01	0

***RPDs have only been considered where a concentration**
****Elevated RPDs are highlighted as per QAQC Profile sett**
*****Interlab Duplicates are matched on a per compound b**

DRAFT

Appendix E

Chain of Custody

CHAIN OF CUSTODY

COC#: 75349 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT120

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE: / ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT120_241112		12/11/2024 04:19 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2436902

Telephone : - 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 75349 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT120

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_POT120_241112	HDPE (no PTFE)	20 mL	00350822015960	Grey	No	
001	0990_POT120_241112	HDPE (no PTFE)	20 mL	00350822016411	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

CHAIN OF CUSTODY

COC#: 75351 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT130

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT130_2411		12/11/2024 05:11 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2436904

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 75351 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT130

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO: / ES2024AECOMAU0010

SAMPLER MOBILE:

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_POT130_2411	HDPE (no PTFE)	20 mL	00350822016326	Grey	No	
001	0990_POT130_2411	HDPE (no PTFE)	20 mL	00350822016591	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

CHAIN OF CUSTODY

COC#: 75352 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT125

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE: / ES2024AECOMAU0010

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT125_241112		12/11/2024 04:31 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2436906

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 75352 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT125

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A

Random Sample Temperature on Receipt: -C

Other comments:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO: / ES2024AECOMAU0010

SAMPLER MOBILE:

EMAIL REPORTS TO: [redacted]

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_POT125_241112	HDPE (no PTFE)	20 mL	00350822016337	Grey	No	
001	0990_POT125_241112	HDPE (no PTFE)	20 mL	00350822015893	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

CHAIN OF CUSTODY

COC#: 75446 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY: [redacted]
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT240

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT240_241112		12/11/2024 05:14 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2436908

Telephone : +61-2-8784 8555

CHAIN OF CUSTODY

COC#: 75446 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT240

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO: / ES2024AECOMAU001 0

SAMPLER MOBILE:

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_POT240_241112	HDPE (no PTFE)	20 mL	00350822016321	Grey	No	
001	0990_POT240_241112	HDPE (no PTFE)	20 mL	00350822016568	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

CHAIN OF CUSTODY

COC#: 75447 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT127

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT127_241112		12/11/2024 05:33 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2436909

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 75447 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] 15/11/24. 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT127

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO: / ES2024AECOMAU0010

SAMPLER MOBILE:

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		-C	
Other comments:			

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_POT127_241112	HDPE (no PTFE)	20 mL	00350822015768	Grey	No	
001	0990_POT127_241112	HDPE (no PTFE)	20 mL	00350822016180	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

CHAIN OF CUSTODY

COC#: 75448 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: OTH118

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_OTH118_241112		12/11/2024 05:36 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2436912

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 75448 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: OTH118

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_OTH118_241112	HDPE (no PTFE)	20 mL	00350822015987	Grey	No	
001	0990_OTH118_241112	HDPE (no PTFE)	20 mL	00350822016454	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

CHAIN OF CUSTODY

COC#: 75334 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT168

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE: / ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT168_241112		12/11/2024 10:12 AM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2436913

Telephone : +61-2-8784 8555

CHAIN OF CUSTODY

COC#: 75334 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT168

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU0010

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_POT168_241112	HDPE (no PTFE)	20 mL	00352312019299	Grey	No	
001	0990_POT168_241112	HDPE (no PTFE)	20 mL	00352312019388	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

CHAIN OF CUSTODY

COC#: 75335 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT126

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU0010

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT126_241112		12/11/2024 09:47 AM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney
Work Order Reference
ES2436914

Telephone : +61-2-8784 8555

CHAIN OF CUSTODY

COC#: 75335 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT126

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU0010

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_POT126_241112	HDPE (no PTFE)	20 mL	00352312019414	Grey	No	
001	0990_POT126_241112	HDPE (no PTFE)	20 mL	00352312019400	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

CHAIN OF CUSTODY

COC#: 75338 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: OTH117

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: / ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_OTH117_241112		12/11/2024 10:15 AM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney
Work Order Reference
ES2436915

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 75338 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: OTH117

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: / ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_OTH117_241112	HDPE (no PTFE)	20 mL	00352312019340	Grey	No	
001	0990_OTH117_241112	HDPE (no PTFE)	20 mL	00352312019422	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

CHAIN OF CUSTODY

COC#: 75339 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT121

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE: / ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT121_241112		12/11/2024 10:25 AM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2436916

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 75339 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT121

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_POT121_241112	HDPE (no PTFE)	20 mL	00350822016361	Grey	No	
001	0990_POT121_241112	HDPE (no PTFE)	20 mL	00350822016118	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

CHAIN OF CUSTODY

COC#: 75346 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT124

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT124_241112		12/11/2024 12:19 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2436917

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 75346 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT124

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A

Random Sample Temperature on Receipt: °C

Other comments:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO: / ES2024AECOMAU0010

SAMPLER MOBILE:

EMAIL REPORTS TO: [redacted]

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_POT124_241112	HDPE (no PTFE)	20 mL	00350822016340	Grey	No	
001	0990_POT124_241112	HDPE (no PTFE)	20 mL	00350822015791	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

CHAIN OF CUSTODY

COC#: 75348 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT201

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT201_241112		12/11/2024 10:54 AM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2436919

Telephone : + 61-2-8784 8555

Wednesday, November 13, 2024 3:23:43 AM

CHAIN OF CUSTODY

COC#: 75348 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT201

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU0010

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_POT201_241112	HDPE (no PTFE)	20 mL	00352309075432	Grey	No	
001	0990_POT201_241112	HDPE (no PTFE)	20 mL	00352309081898	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

CHAIN OF CUSTODY

COC#: 75350 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT114

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT114_241112		12/11/2024 12:31 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2436920

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 75350 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT114

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU0010

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_POT114_241112	HDPE (no PTFE)	20 mL	00352309075521	Grey	No	
001	0990_POT114_241112	HDPE (no PTFE)	20 mL	00352309075536	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

CHAIN OF CUSTODY

COC#: 75410 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT198

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: / ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT198_241112		12/11/2024 10:38 AM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2436921

Telephone : – 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 75410 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT198

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: / ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_POT198_241112	HDPE (no PTFE)	20 mL	00352312019435	Grey	No	
001	0990_POT198_241112	HDPE (no PTFE)	20 mL	00352312019392	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

CHAIN OF CUSTODY

COC#: 75303 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: oth119

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		C	

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_OTH119_241111		11/11/2024 04:53 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2436922

elephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 75303 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: oth119

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_OTH119_241111	HDPE (no PTFE)	20 mL	00350822083266	Grey	No	
001	0990_OTH119_241111	HDPE (no PTFE)	20 mL	00350822083393	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

CHAIN OF CUSTODY

COC#: 75304 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT131

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS

SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT131_241112		12/11/2024 09:37 AM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division
Sydney
Work Order Reference
ES2436923

Telephone : - 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 75304 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT131

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_POT131_241112	HDPE (no PTFE)	20 mL	00352312019399	Grey	No	
001	0990_POT131_241112	HDPE (no PTFE)	20 mL	00352312019488	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

CHAIN OF CUSTODY

COC#: 75329 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT112

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT112_241111		11/11/2024 04:06 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2436924

Telephone : - 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 75329 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT112

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_POT112_241111	HDPE (no PTFE)	20 mL	00350822016436	Grey	No	
001	0990_POT112_241111	HDPE (no PTFE)	20 mL	00350822016151	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

CHAIN OF CUSTODY

COC#: 75330 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT128

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT128_2411		11/11/2024 04:17 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2436926

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 75330 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT128

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_POT128_2411	HDPE (no PTFE)	20 mL	00350822083517	Grey	No	
001	0990_POT128_2411	HDPE (no PTFE)	20 mL	00350822083332	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

CHAIN OF CUSTODY

COC#: 75332 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT129

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT129_241111		11/11/2024 04:38 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2436927

Telephone : +61-2-8784 8555

CHAIN OF CUSTODY

COC#: 75332 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1000

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT129

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: / ES2024AECOMAU0010

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_POT129_241111	HDPE (no PTFE)	20 mL	00350822083800	Grey	No	
001	0990_POT129_241111	HDPE (no PTFE)	20 mL	00350822083513	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

CHAIN OF CUSTODY

COC#: 75345 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT113

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT113_241111		11/11/2024 04:31 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2436928

Telephone : + 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 75345 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1600

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT113

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU0010

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_POT113_241111	HDPE (no PTFE)	20 mL	00350822083493	Grey	No	
001	0990_POT113_241111	HDPE (no PTFE)	20 mL	00350822083438	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

CHAIN OF CUSTODY

COC#: 75331 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY: [redacted]
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT113

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT113_241111		13/11/2024 03:35 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2436970

Telephone : +61-2-8784 8555

CHAIN OF CUSTODY

COC#: 75331 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1600

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT113

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE: / ES2024AECOMAU0010

EMAIL REPORTS TO: [redacted]

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_POT113_241111	HDPE (no PTFE)	20 mL	00350822083493	Grey	No	
001	0990_POT113_241111	HDPE (no PTFE)	20 mL	00350822083438	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

CHAIN OF CUSTODY

COC#: 75336 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT131

ORDER NO: 60676801/

PROJECT MANAGER [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_POT131_241112		13/11/2024 03:31 PM	WATER	ALS: 2 Non ALS: 0	No	X		

Environmental Division Sydney

Work Order Reference

ES2436971

Telephone : - 61-2-8784 8555

CHAIN OF CUSTODY

COC#: 75336 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1600

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: POT131

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER:

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU0010

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_POT131_241112	HDPE (no PTFE)	20 mL	00352312019399	Grey	No	
001	0990_POT131_241112	HDPE (no PTFE)	20 mL	00352312019488	Grey	No	

Total Bottle Count: ALS: 2, Non ALS: 0

CHAIN OF CUSTODY

COC#: 75362 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: PP QC'S NOVEMBER

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_QC100_241111		11/11/2024 04:57 PM	WATER	ALS: 2 Non ALS: 0	No	X		
002	0990_QC101_241112		12/11/2024 05:38 PM	WATER	ALS: 2 Non ALS: 0	No	X		
~~003~~	0990_QC200_241111	send to als brisbane	11/11/2024 04:55 PM	WATER	ALS: 2 Non ALS: 0	No	X		
~~004~~	0990_QC201_241112	send to als brisbane	12/11/2024 05:40 PM	WATER	ALS: 2 Non ALS: 0	No	X		
005	0990_QC300_241111	~~send to als brisbane~~	11/11/2024 04:59 PM	WATER	ALS: 2 Non ALS: 0	No	X		
006	0990_QC301_2411	~~Send to als brisbane~~	12/11/2024 01:44 PM	WATER	ALS: 2 Non ALS: 0	No	X		
007	0990_QC400_241111		11/11/2024 04:58 PM	WATER	ALS: 2 Non ALS: 0	Yes	-		

Environmental Division Sydney

Work Order Reference

ES2437021

Telephone : + 61-2-8784 8555

Subcon / Forward Lab / Split WO

Lab / Analysis: ALS Brisbane

Organised By / Date:

Relinquished By / Date:

Connote / Courier: QC FWD

WO No: ES2437021

Attached By PO / Internal Sheet:

CHAIN OF CUSTODY

COC#: 75362 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: PP QC'S NOVEMBER

ORDER NO: 60676801/

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU0010

EMAIL REPORTS TO: [redacted]

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
008	0990_QC401_241112		12/11/2024 01:45 PM	WATER	ALS: 2 Non ALS: 0	Yes	-		
009	0990_QC500_241111		11/11/2024 05:01 PM	WATER	ALS: 2 Non ALS: 0	Yes	-		

CHAIN OF CUSTODY

COC#: 75362 *ALS Laboratory:* ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	[redacted] DATE TIME: 15/11/24 1100

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: PP QC'S NOVEMBER

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

SAMPLER MOBILE:

QUOTE NO: / ES2024AECOMAU0010

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_QC100_241111	HDPE (no PTFE)	20 mL	00350822083340	Grey	No	
001	0990_QC100_241111	HDPE (no PTFE)	20 mL	00350822083256	Grey	No	
002	0990_QC101_241112	HDPE (no PTFE)	20 mL	00350822015966	Grey	No	
002	0990_QC101_241112	HDPE (no PTFE)	20 mL	00350822015747	Grey	No	
003	0990_QC200_241111	HDPE (no PTFE)	20 mL	00350822083501	Grey	No	
003	0990_QC200_241111	HDPE (no PTFE)	20 mL	00350822083401	Grey	No	
004	0990_QC201_241112	HDPE (no PTFE)	20 mL	00352312019341	Grey	No	
004	0990_QC201_241112	HDPE (no PTFE)	20 mL	00352312019364	Grey	No	
005	0990_QC300_241111	HDPE (no PTFE)	20 mL	00350822083372	Grey	No	
005	0990_QC300_241111	HDPE (no PTFE)	20 mL	00350822083279	Grey	No	
006	0990_QC301_2411	HDPE (no PTFE)	20 mL	00352312019274	Grey	No	
006	0990_QC301_2411	HDPE (no PTFE)	20 mL	00352312019230	Grey	No	
007	0990_QC400_241111	HDPE (no PTFE)	20 mL	00350822083550	Grey	No	
007	0990_QC400_241111	HDPE (no PTFE)	20 mL	00350822083717	Grey	No	
008	0990_QC401_241112	HDPE (no PTFE)	20 mL	00350822015891	Grey	No	
008	0990_QC401_241112	HDPE (no PTFE)	20 mL	00350822016074	Grey	No	
009	0990_QC500_241111	HDPE (no PTFE)	20 mL	00350822083238	Grey	No	
009	0990_QC500_241111	HDPE (no PTFE)	20 mL	00350822083418	Grey	No	

Total Bottle Count: ALS: 18, Non ALS: 0

Mandatory Fields	CHAIN OF CUSTODY			Page __1_of 3
CLIENT CODE:	*PROJECT MANAGER:	[redacted]	SAMPLER:	[redacted]
*CLIENT: AECOM	*PM MOBILE:	[redacted]	SAMPLER MOBILE:	[redacted]
OFFICE: (Invoiced Office) Darwin	ALS QUOTE # (Client PL if blank)	SY/139/19 V3	PURCHASE ORDER NO.:	60676801/7.03.01
PROJECT NO./PROJECT:	NT_0990_PFASOMP_24		SITE:	Private Property
*INVOICE TO: (client default if nil)	[redacted]		☐ CC Invoice to PM	BIOSECURITY
*EMAIL REPORTS TO: (default to PM if blank)	[redacted]			Country of Origin: (if not Australia)

CoC #: (if applicable)

*** STORAGE REQUIREMENTS** (Please check box. →)
- X Standard Storage
- ☐ Extended Storage

Standard Storage time from receipt of samples: Waters - 3 weeks; Soils - 2 months

Specify Disposal Date:

Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** (Please check box. →)
- X 5+ days (no surcharge)
- ☐ 3 day (+15%)
- ☐ 2 day (+30%)
- ☐ 1 day (+50%)

(Not all tests can be expedited, contact Client Services for more information)

***ANALYSIS REQUIRED**

(NB: ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)

Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).

Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sampl

Environmental Division Sydney
Work Order Reference
ES2440543

Telephone : + 61-2-8784 9555

Comments:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	EP231X	HOLD	Dup (additional bottles req.)	MS (additional bottles req.)	(Comment on hazards - e.g., asbestos, known high contamination)
1	0990_POT112_241209		9/12/2024	2	W	X		☐	☐	
2	0990_POT128_241209		9/12/2024	2	W	X		☐	☐	
3	0990_POT113_241209		9/12/2024	2	W	X		☐	☐	
4	0990_POT129_241209		9/12/2024	2	W	X		☐	☐	
5	0990_OTH119_241209		9/12/2024	2	W	X		☐	☐	
6	0990_POT126_241209		9/12/2024	2	W	X		☐	☐	
7	0990_POT131_241209		9/12/2024	2	W	X		☐	☐	
8	0990_OTH117_241209		9/12/2024	2	W	X		☐	☐	
9	0990_POT125_241209		9/12/2024	2	W	X		X	X	Extra volume for lab QC
10	0990_POT130_241211		11/12/2024	2	W	X		☐	☐	

Subcon: Forward Lab Split WO
Lab / Analysis: NMY
Organised By / Date:
Relinquished By / Date:
Courier / Courier: QC FWD
WO No: ES2440543
Attached By PO / Internal Sheet:

Receipt Detail (Lab Use ONLY)	Chilling Method:	Ice: Frozen / Melted	Ice Bricks: Frozen / Thawed	None	Sample Temp at Receipt	°C	°C	°C	Security Seal Intact (circle)	Yes / No / NA(None)	Carrier Details	☐ Courier/Post	☐ Client	Packaging: (Circle)	Hard Esky	Foam Esky	Box/Bag/Other
											Con Note #			Count	#	#	#

Relinquished by: Jordan Brookes	Signature: [redacted]	Date/Time: 11/12/2024	Received by: [redacted]	Signature [redacted]	Date/Time: 11/12 2:30pm		
Relinquished by:	Signature: [redacted]	Date/Time:	Received by: [redacted]	Signature	Date/Time: 12/12/24 1030		

Mandatory Fields	CHAIN OF CUSTODY	Page __2_ of 3

CLIENT CODE:		*PROJECT MANAGER:	[redacted]	SAMPLER:	[redacted]
*CLIENT:	AECOM	*PM MOBILE:	[redacted]	SAMPLER MOBILE:	[redacted]
OFFICE: (Invoiced Office)	Darwin	ALS QUOTE # (Client PL if blank)	SY/139/19 V3	PURCHASE ORDER NO.:	60676801/7.03.01
PROJECT NO./PROJECT:	NT_0990_PFASOMP_24			SITE:	Private Property
*INVOICE TO: (client default if nil)	[redacted]			☐ CC Invoice to PM	
*EMAIL REPORTS TO: (default to PM if blank)	[redacted]				

CoC #: (if applicable)

BIOSECURITY

Country of Origin: (if not Australia)

WO Sticker to go here. (ALS use only)

*** STORAGE REQUIREMENTS** Please check box. →
Standard Storage time from receipt of samples:
Waters - 3 weeks
Soils - 2 months

☒ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** Please check box. →
(Not all tests can be expedited, contact Client Services for more information)

☒ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

***ANALYSIS REQUIRED**
(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

Comments:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	EP231X	HOLD										Lab QC (additional bottles req.) Dup	MS	Additional Information (Comment on hazards - e.g. asbestos, known high contamination)
11	0990_POT121_241211		11/12/2024	2	W	X											☐	☐	
12	0990_POT120_241211		11/12/2024	2	W	X											☐	☐	
13	0990_POT198_241211		11/12/2024	2	W	X											☒	☒	Extra volume for lab QC
14	0990_POT201_241211		11/12/2024	2	W	X											☐	☐	
15	0990_POT124_241211		11/12/2024	2	W	X											☐	☐	
16	0990_POT114_241211		11/12/2024	2	W	X											☐	☐	
17	0990_POT127_241211		11/12/2024	2	W	X											☐	☐	
18	0990_OTH118_241211		11/12/2024	2	W	X											☐	☐	
19	0990_QC100_241209		9/12/2024	2	W	X											☐	☐	
20	0990_QC101_241211		11/12/2024	2	W	X											☐	☐	

Receipt Detail (Lab Use ONLY)	Chilling Method: Ice: Frozen / Melted; Ice Bricks: Frozen / Thawed; None	Sample Temp at Receipt °C °C °C	Security Seal Intact (circle) Yes / No / NA(None)	Carrier Details ☐ Courier/Post ☐ Client; Con Note #	Packaging: (Circle) Hard Esky, Foam Esky, Box/Bag/Other; Count # # #

Relinquished by: Jordan Brookes	Signature:	Date/Time: 11/12/2024	Received by: [redacted]	Signature [redacted]	Date/Time: 11/12 2:30pm
Relinquished by:	Signature:	Date/Time:	Received by: [redacted]	Signature	Date/Time: 13/12/24 10:00

Mandatory Fields	CHAIN OF CUSTODY	Page 3 of 3

CLIENT CODE:		*PROJECT MANAGER:	[redacted]	SAMPLER:	[redacted]
*CLIENT:	AECOM	*PM MOBILE:	[redacted]	SAMPLER MOBILE:	[redacted]
OFFICE: (Invoiced Office)	Darwin	ALS QUOTE # (Client PL if blank)	SY/139/19 V3	PURCHASE ORDER NO.:	60676801/7.03.01
PROJECT NO./PROJECT:	NT_0990_PFASOMP_24			SITE:	Private Property
*INVOICE TO: (client default if nil)	[redacted]			☐ CC Invoice to PM	
*EMAIL REPORTS TO: (default to PM if blank)	[redacted]				

CoC #: (if applicable)

BIOSECURITY

Country of Origin: (if not Australia)

*** STORAGE REQUIREMENTS**
Please check box.
→
Standard Storage time from receipt of samples:
Waters - 3 weeks
Soils - 2 months

☒ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND**
Please check box.
→
(Not all tests can be expedited, contact Client Services for more information)

☒ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

***ANALYSIS REQUIRED**
(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

WO Sticker to go here.
(ALS use only)

Comments:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S), Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	EP231X	HOLD											Lab QC (additional bottles req.) Dup	MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
—	0990_QC200_241209		9/12/2024	2	W	X												☐	☐	PLS FWD TO NMI FOR ANALYSIS
—	0990_QC201_241211		11/12/2024	2	W	X												☐	☐	PLS FWD TO NMI FOR ANALYSIS
21	0990_QC300_241209		9/12/2024	2	W	X												☐	☐	
22	0990_QC400_241209		9/12/2024	2	W	X												☐	☐	
23	0990_QC500_241209		9/12/2024	2	W	X												☐	☐	
24	0990_QC301_241211		11/12/2024	2	W	X												☐	☐	
25	0990_QC401_241211		11/12/2024	2	W	X												☐	☐	
																		☐	☐	
																		☐	☐	
																		☐	☐	

Receipt Detail (Lab Use ONLY)	Chilling Method: Ice: Frozen / Melted; Ice Bricks: Frozen / Thawed; None	Sample Temp at Receipt °C °C °C	Security Seal Intact (circle) Yes / No / NA(None)	Carrier Details ☐ Courier/Post ☐ Client; Con Note #	Packaging: (Circle) Hard Esky Foam Esky Box/Bag/Other; Count # # #

Relinquished by: Jordan Brookes	Signature: [redacted]	Date/Time: 11/12/2024	Received by: [redacted]	Signature [redacted]	Date/Time: 11/12 2:30 pm
Relinquished by:	Signature: [redacted]	Date/Time:	Received by: [redacted]	Signature	Date/Time: 13/12/24 10:30

Mandatory Fields	CHAIN OF CUSTODY			Page 1 of 4
CLIENT CODE:	*PROJECT MANAGER: [redacted]	SAMPLER: [redacted]		
*CLIENT: AECOM	*PM MOBILE: [redacted]	SAMPLER MOBILE: [redacted]		
OFFICE: (invoiced Office) Darwin	ALS QUOTE # (Check PL / Blank): SY/139/19 V3	PURCHASE ORDER NO.: 60676601 / 7.03.01		
PROJECT NO / PROJECT: NT_0990_PFASOMP_25		SITE: Private Property		
*INVOICE TO: (client default if blank) [redacted]			☐ CC invoice to PM	BIOSECURITY
*EMAIL REPORTS TO: (default to PM if blank) [redacted]				Country of Origin (Fresh produce)

Environmental Division Sydney
Work Order Reference
ES2501556

Telephone : +61-2-8784 8555

***ANALYSIS REQUIRED**
(NB. As 5 Digit Alp analysis Analysis Suite Codes must be listed to attract accredited price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

*** STORAGE REQUIREMENTS**
Please check box
→
Standard Storage time from receipt of samples
Waters - 3 weeks
Soils - 2 months
☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND**
Please check box
→
(Not all tests can be accredited, contact Client Services for more information)
☐ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

Comments:

| ALS Use Only Lab ID | Sample ID | Depth | Date/Time | No. Bottles | MATRIX: Soil/Solids, Sediment, Water, Leachate, Sludge, Product, Air, Biota (BS) | WATER - EP231X PFAS - Full Suite (31 analytes) | WATER - DP231X-LL PFAS - Full Suite (31 analytes) Low Level | | | |

Mandatory Fields	CHAIN OF CUSTODY					Page 2 of 4
CLIENT CODE:		*PROJECT MANAGER:	[redacted]	SAMPLER:	[redacted]	
*CLIENT:	AECOM	*PM MOBILE:	[redacted]	SAMPLER* MOBILE:	[redacted]	CoC # (if applicable)
OFFICE (Invoiced Office)	Darwin	ALS QUOTE # (Client PO if blank)	SY/139/19 V3	PURCHASE ORDER No.:	60676801 / 7.00.01	
PROJECT NO./PROJECT		NT_0990_PFASOMP_25		SITE:	Private Property	

*INVOICE TO: (Invoice Address if no) [redacted] ☐ CC invoice to PM

*EMAIL REPORTS TO: (default to PM if blank) [redacted]

BIOSECURITY

Country of Origin:

*ANALYSIS REQUIRED

INS: All Chem Numbers, Analysis Suite Codes must be listed to ensure correct quoted price)
Where blank are required, specify Total/Filtered bottle requirements. Otherwise (field filtered bottle required)
Mark an X in the tick box below analysis to indicate the parameter listed above to be tested on that sample.

*STORAGE REQUIREMENTS (Please check box) ☐ Standard Storage ☐ Extended Storage

Standard Storage time from receipt of sample: Water - 3 weeks; Soils - 2 months

Specify Disposal Date:

Note: Extended storage incurs a fee and requires a signed agreement.

*TURNAROUND (Please check box) ☐ 5+ days (no surcharge) ☐ 3 day (+15%) ☐ 2 day (+37%) ☐ 1 day (+50%)

(Not all tests can be expedited, contact Client Services for more information)

WO Sticker to go here (ALS use only)

Comments:

ALS Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX (Soil/Sediment (S), Water (W), Soil Leach (SL), Dust (D), Product (P), Tissue (T))	WATER: PFAS - Full Suite (21 analytes)	WATER: PFAS - Full Suite (21 analytes) Low Level											Dup	MS	Additional Information (Comment on hazards - e.g. asbestos, volatile, high contamination)
11	0990_PQ0120_250114		14/01/2024	2	W	X												☐	☐	
12	0990_PQ0128_250114		14/01/2024	2	W		X											☐	☐	
13	0990_PQ0201_250114		14/01/2024	2	W		X											☐	☐	
14	0990_PQ0124_250114		14/01/2024	2	W		X											☐	☐	
15	0990_PQ0118_250114		14/01/2024	2	W	X												☐	☐	
16	0990_PQ0127_250114		14/01/2024	2	W		X											☐	☐	
17	0990_DH0118_250114		14/01/2024	2	W		X											☐	☐	
18	0990_QC101_250113		13/01/2025	2	W	X												☐	☐	
—	0990_QC200_2501		13/01/2025	2	W	X												☐	☐	Pb issued to NMI
19	0990_QC300_250113		13/01/2025	2	W	X												☐	☐	

Receipt Detail (Location): Cooling Method: Ice / Gel Packs / Ambient; Ice Brand: Frogs / Generic; Blank: None; Sample Temp at Receipt: °C °C °C; Security Seal Intact: Yes / No / N/A (Airfreight); Courier Details (Con Note #): ☐ Courier/Post ☐ Client; Packaging (Circle) Clean: Hard Dry / Foam Dry / Bag/Ice/Wet

Relinquished by: Signature: Date/Time:

Received by: [redacted] Signature: [redacted] Date/Time: 22/1/25 11:30

Relinquished by: Signature: Date/Time:

Received by: [redacted] Signature: [redacted] Date/Time:

Mandatory Fields		CHAIN OF CUSTODY				Page 3 of 4
CLIENT CODE		*PROJECT MANAGER:	[redacted]	SAMPLER:	[redacted]	
*CLIENT:	AECOM	*PM MOBILE:	[redacted]	SAMPLER MOBILE	[redacted]	CoC # (if applicable)
OFFICE: (Invoiced Office)	Darwin	ALS QUOTE # (Client PO if blank)	SY/139/19 V3	PURCHASE ORDER NO:	60676801 / 7.01.01	
PROJECT NO / PROJECT		NT_0990_PFASOMP_25		SITE:	Private Property	

*INVOICE TO: (Client Invoice) [redacted] ☐ CC Invoice to PM

*EMAIL REPORTS TO: (default to PM if blank) [redacted]

BIOSECURITY

Exempt at Origin:

*** STORAGE REQUIREMENTS**
Please check box →
Standard Storage (Waters - 3 months, Soils - 2 months)
☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended Storage incurs a fee and requires a signed agreement.

*** TURNAROUND**
Please check box →
(Not all tests can be expedited, contact Client Services for more information)
☐ 5+ days (no surcharge)
☐ 3 day (+35%)
☐ 2 day (+50%)
☐ 1 day (+50%)

***ANALYSIS REQUIRED**
(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to assist sample/analyte prior)
(Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below to indicate the parameter listed above is to be tested on that sample.

WO Sticker to go here. (ALS use only)

Comments:

ALS Use Lab ID	Sample ID	Depth	Date/Time	No. Bottles	ALS MATRIX (Soil/Water (W), Sediment (SD), Leachate (L), Product (P), Biota (B))	WATER - EPA31X PFAS - Full Suite (31 analytes)	WATER - EPA31X-QL PFAS - Full Suite (31 analytes) Low Level											Lab QC (additional) Dup	MS	Additional Information (Comments, hazards, e.g. asbestos, contamination)
20	0990_MW805_250115		15/01/2024	2	W	X												☐	☐	
21	0990_MW809_250115		15/01/2024	2	W	X												☐	☐	
22	0990_MW810_250115		15/01/2024	2	W	X												☐	☐	
23	0990_MW811_250115		15/01/2024	2	W	X												☐	☐	
24	0990_MW812_250115		15/01/2024	2	W	X												☐	☐	
25	0990_MW813_250115		15/01/2024	2	W	X												☐	☐	
26	0990_QC301_250115		15/01/2024	2	W	X												☐	☐	
27	0990_QC402_250115		15/01/2024	2	W	X												☐	☐	
28	0990_FOT131_250116		16/01/2025	2	W		X											☐	☐	
																		☐	☐	

Receipt Detail (for lab): Cooling Method: Ice / Ice Bricks / None; Frozen / Chilled / Ambient
Sample Temp on Receipt: °C °C °C
Security Seal Intact (Circle): Yes / No / N/A (None)
Carrier Details Con Note #: ☐ Courier/Post ☐ Client
Packaging (Circle) Count: Hard Esky / Foam Esky

Relinquished by: Signature: Date/Time:
Received by: Signature: Date/Time:
Relinquished by: Signature: Date/Time:
Received by: [redacted] Signature: [redacted] Date/Time: 22/1/25 1130

Mandatory Fields

CHAIN OF CUSTODY

CLIENT CODE:		*PROJECT MANAGER:	[redacted]	SAMPLER:	[redacted]
*CLIENT:	AECOM	*PM MOBILE:	[redacted]	SAMPLER MOBILE:	[redacted]
OFFICE: (Invoicing Office)	Darwin	ALS QUOTE # (Client To Fill In)	SY/139/19 V3	PURCHASE ORDER NO.:	60676601 / 7.03.01
PROJECT NO / PROJECT	NT_0990_PFASOMP_25			SITE:	Private Property

CoC Number (if applicable)

*INVOICE TO: (Client default if nil) [redacted]

☐ CC Invoice to PM

BIOSECURITY

County of Origin

*EMAIL REPORTS TO: (default to PM if blank) [redacted]

*** STORAGE REQUIREMENTS**
Please check box →
Standard Storage time from receipt of samples:
Water - 3 weeks
Soil - 3 months

☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND**
Please check box →
(Not all tests can be expedited, contact Client Services for more information)

☐ 5 – days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 Day (+50%)

***ANALYSIS REQUIRED**
(NB: ALS Client No. and/or Analyst Suite Codes may be listed to attract subcontracted rates)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)
Mark an X in the boxes below analyses to indicate the parameter listed above to be tested on that sample.

WO Sticker to go. (ALS use only)

Comments:

ALS Use Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX Soil/Solid (S), Water (W), Sediment (SD), Dust (D), Tissue (PT), Biota (B)	WATER - EP231X PFAS - Full Suite (31 analytes)	WATER EP231X LL PFAS - Full Suite (31 analytes) Low Level											Dup	MS	Additional Comment or Instructions - e.g. contam
29	0990_GC400_250112		13/01/2025	2	W	X												☐	☐	
30	0990_GC500_250113		14/01/2025	2	W	X												☐	☐	
31	0990_GC101_250114		14/01/2024	2	W	X												☐	☐	
—	0990_GC201_250112		14/01/2024	2	W	X												☐	☐	Pb forever
32	0990_GC101_250114		14/01/2024	2	W	X												☐	☐	
—	0990_GC202_250114		14/01/2024	2	W	X												☐	☐	Pb forever
33	0990_GC201_250114		14/01/2024	2	W	X												☐	☐	
34	0990_GC401_250114		14/01/2024	2	W	X												☐	☐	
—	0990_SW103_250113		13/01/2024	2	W	X												☐	☐	Extra for
35	0990_SW108_250113		13/01/2024	2	W	X												☐	☐	

Receipt Detail (Lab Use)	Chilling Method: Ice / Frozen / Wetpak	Ice Bricks / Frozen / Ambient	None	Temp: Sample / Receipt	°C °C °C	Security Seal Intact (circle) Yes / No / NA(None)

Carrier / Details / Con Note # ☐ Courier/Post ☐ Client

Packaging (Circle) Good / Poor Hard Slip / Foam

Relinquished by: Signature: Date/Time

Received by: [redacted] Sign: [redacted] Date/Time 22/1 1126

Relinquished by: Signature: Date/Time

Received by: [redacted] Sign: [redacted] Date/Time 22/1/25 1112

CHAIN OF CUSTODY

COC#: 73719 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY: [redacted]
DATE TIME:	DATE TIME: 07/11 1030	DATE TIME:	DATE TIME: 5/11/24 12:30

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual SW

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO: / ES2024AECOMAU001 0

SAMPLER MOBILE:

EMAIL REPORTS TO: [redacted]

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
001	0990_SW161_221101		01/11/2024 11:00 AM	WATER	ALS: 2 Non ALS: 0	No	X		
002	0990_SW110_241030		30/10/2024 06:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		
003	0990_SW100_241030		30/10/2024 05:30 PM	WATER	ALS: 2 Non ALS: 0	No	X		
004	0990_SW108_241030		30/10/2024 05:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		
005	0990_SW153_241030		30/10/2024 05:20 PM	WATER	ALS: 2 Non ALS: 0	No	X		
006	0990_QC101_241101		04/11/2024 11:11 AM	WATER	ALS: 2 Non ALS: 0	No	X		
007	0990_QC201_241101	Send to ALS Brisbane	04/11/2024 11:12 AM	WATER	ALS: 2 Non ALS: 0	No	X		

Station / Forward Lab / Split WO

Lab / Analysis: Brisbane

Organised By / Date: Dark

Relinquished By / Date: 5/11/24

Courier / Courier:

WO No: ES2485723

Attach By PO / Forward Slip:

Environmental Division Brisbane

Work Order Reference

EB2438417

Telephone : + 61-7-3552-8685

CHAIN OF CUSTODY

COC#: 73719 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual SW

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO:

SAMPLER MOBILE:

/ ES2024AECOMAU001 0

EMAIL REPORTS TO: [redacted]

LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SAMPLE DETAILS							ANALYSIS REQUIRED		
SAMPLE	NAME	DESCRIPTION	DATE / TIME	MATRIX	TOTAL BOTTLES	ON HOLD	PFAS Waters - New Analysis WATER	ALTERNATIVE ANALYSIS	ADDITIONAL INFORMATION
008	0990_QC301_241101	Rinsate	01/11/2024 04:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		
009	0990_QC401_241101	Field blank	01/11/2024 04:00 PM	WATER	ALS: 2 Non ALS: 0	No	X		

CHAIN OF CUSTODY

COC#: 73719 ALS Laboratory: ES Sydney Environmental

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE TIME:	DATE TIME:	DATE TIME:	DATE TIME:

CLIENT: AECOMAU - AECOM Australia Pty Ltd

PROJECT: NT_0990_PFASOMP_24

SITE: Biannual SW

ORDER NO: 60676801/

TURNAROUND REQUIREMENTS : 5 Days

Biohazard info:

LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comments:

PROJECT MANAGER: [redacted]

PRIMARY SAMPLER: [redacted]

CONTACT PH:

QUOTE NO: / ES2024AECOMAU0010

SAMPLER MOBILE:

EMAIL REPORTS TO: [redacted]

SAMPLE	SAMPLE NAME	BOTTLE NAME	VOLUME	BARCODE	TYPE	FILTERED	REASON
001	0990_SW161_221101	HDPE (no PTFE)	20 mL	00352309080037	Grey	No	
001	0990_SW161_221101	HDPE (no PTFE)	20 mL	00352309079924	Grey	No	
002	0990_SW110_241030	HDPE (no PTFE)	20 mL	00352312045871	Grey	No	
002	0990_SW110_241030	HDPE (no PTFE)	20 mL	00352312046143	Grey	No	
003	0990_SW100_241030	HDPE (no PTFE)	20 mL	00352312046309	Grey	No	
003	0990_SW100_241030	HDPE (no PTFE)	20 mL	00352312046081	Grey	No	
004	0990_SW108_241030	HDPE (no PTFE)	20 mL	00352312045919	Grey	No	
004	0990_SW108_241030	HDPE (no PTFE)	20 mL	00352312046116	Grey	No	
005	0990_SW153_241030	HDPE (no PTFE)	20 mL	00352312045772	Grey	No	
005	0990_SW153_241030	HDPE (no PTFE)	20 mL	00352312046221	Grey	No	
006	0990_QC101_241101	HDPE (no PTFE)	20 mL	00352312046310	Grey	No	
006	0990_QC101_241101	HDPE (no PTFE)	20 mL	00352312046313	Grey	No	
007	0990_QC201_241101	HDPE (no PTFE)	20 mL	00352312046274	Grey	No	
007	0990_QC201_241101	HDPE (no PTFE)	20 mL	00352312046321	Grey	No	
008	0990_QC301_241101	HDPE (no PTFE)	20 mL	00352312046086	Grey	No	
008	0990_QC301_241101	HDPE (no PTFE)	20 mL	00352312046339	Grey	No	
009	0990_QC401_241101	HDPE (no PTFE)	20 mL	00352312046100	Grey	No	
009	0990_QC401_241101	HDPE (no PTFE)	20 mL	00352312045806	Grey	No	

Total Bottle Count: ALS: 18, Non ALS: 0

ALSCompass SAMPLING Intelligence

ALS

ESK 204

ALS Use Only

Custody Document for Submissions via ALS Compass App

Project: 60676801 Client: DoD Project Manager: [redacted]

Phone: ([redacted]

ALS Compass COC Reference: 73719 # Samples: 9 Sampler: [redacted]

Phone: ([redacted]

Turnaround Requirements: Standard X Urgent

Special Instructions:	ALS Use Only			
	Custody seal intact?	YES	NO	N/A
	Free ice / frozen ice bricks upon receipt?	YES	NO	N/A
	Random sample temperature on receipt?	9.3	°C	

Custody:

Relinquished by:	Received by:	Relinquished by:	Received by:
[redacted]	[redacted] 1130		[redacted]
Date / Time: 4.11	Date / Time: 04 NOV 2024	Date / Time:	Date / Time: 5/11/24 12:30

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐BRISBANE 2 Byth Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 1/29 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee mail@alsglobal.com
☐NEWCASTLE 5/585 Maitland Road Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: AECOM
OFFICE: Darwin
PROJECT: NT_0990_PFASMGMT_24 PROJECT NO 60676801
ORDER NUMBER: PURCHASE ORDER NO.: 60676801/1.0
PROJECT MANAGER: [redacted] CONTACT PH [redacted]
SAMPLER [redacted] SAMPLER MOBILE: [redacted]
COC Emailed to ALS? (YES) EDD FORMAT (or default):
Email Reports to: [redacted]
Email Invoice to (will default to PM if no other addresses are listed): ap_customerservice.anz.aecom.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☐ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.:
COUNTRY OF ORIGIN:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY: [redacted] 1:35pm	RELINQUISHED BY:	RECEIVED BY: [redacted]
DATE/TIME:	DATE/TIME: 6/12	DATE/TIME:	DATE/TIME: 10/12/24 0830

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

Lab / Analysis: Burgis NMI
Organised By / Date:
Relinquished By / Date:
Connote / Courier: QC Fwd
WO No: ES2439696
Attached By PO / Internal Sheet

Environmental Division Sydney
Work Order Reference
ES2439696
Telephone : + 61-2-8784 8555

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB: Suite Codes must be listed to attract suite price) Where Metals are required, analysis (Total Unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	EP231x - PFAS							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	0990_SW140_241204	4/12/24	w	2 x PFAS	2	x							
2	0990_SW049_241204	4/12/24	w	2 x PFAS	2	x							
3	0990_SW188_241204	4/12/24	w	2 x PFAS	2	x							
4	0990_SW021_241204	4/12/24	w	2 x PFAS	2	x							
5	0990_SW350_241204	4/12/24	w	2 x PFAS	2	x							Extra Volume for QC / MS Dup
6	0990_QC103_241204	4/12/24	w	2 x PFAS	2	x							
7	0990_QC203_241204	4/12/24	w	2 x PFAS	2	x							Please send to NMI for analysis
8	0990_QC303_241204	4/12/24	w	2 x PFAS	2	x							
9	0990_QC403_241204	4/12/24	w	2 x PFAS	2	x							On hold
	0990_QC500_241204	4/12/24	w	2 x PFAS	2	x							On hold
				TOTAL									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐BRISBANE 2 Byth Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 1/29 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5/585 Maitland Road Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-299 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townesville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: AECOM
OFFICE: Darwin
PROJECT: NT_0990_PFASMGMT_24 PROJECT NO 60676801
ORDER NUMBER: PURCHASE ORDER NO.: 60676801/1.0
PROJECT MANAGER: [redacted] CONTACT PH: [redacted]
SAMPLER: [redacted] SAMPLER MOBILE [redacted]
COC Emailed to ALS? (YES) EDD FORMAT (or default):
Email Reports to [redacted]
Email Invoice to (will default to PM if no other addresses are listed): ap_customerservice.anz.aecom.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☐ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.:
COUNTRY OF ORIGIN:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME:	[redacted] 1:35pm DATE/TIME: 6/12	DATE/TIME:	[redacted] DATE/TIME: 10/12/24 0830

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).

Sub-Contracted / Forwarded Lab / Split PO
Lab / Analysis: ~~Eurofins~~ NMI
Organised By / Date:
Relinquished By / Date:
Connote / Courier: QC Fwd
WO No: ES2439696
Attached By PO / Internal Sheet

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED	Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	EP231x - PFAS	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	0990_SW140_241204	4/12/24	w	2 x PFAS	2	x	AECO 09/24121/1
2	0990_SW049_241204	4/12/24	w	2 x PFAS	2	x	18/12
3	0990_SW188_241204	4/12/24	w	2 x PFAS	2	x	11 DEC 2024 14:53
4	0990_SW021_241204	4/12/24	w	2 x PFAS	2	x	Rv (c)
5	0990_SW350_241204	4/12/24	w	2 x PFAS	2	x	11 DEC 2024 14:53
6	0990_QC103_241204	4/12/24	w	2 x PFAS	2	x	Extra Volume for QC / MS Dup
N24/025572	0990_QC203_241204	4/12/24	w	2 x PFAS	2	x	Please send to NMI for analysis
7	0990_QC303_241204	4/12/24	w	2 x PFAS	2	x	
8	0990_QC403_241204	4/12/24	w	2 x PFAS	2	x	On hold
9	0990_QC500_241204	4/12/24	w	2 x PFAS	2	x	On hold
				TOTAL			

Environmental Division Sydney
Work Order Reference
ES2439696
Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

31/1 AECO 09/250123/2 ZH

CHAIN OF CUSTODY

Page 1 of 4

Mandatory Fields					
CLIENT CODE		*PROJECT MANAGER:	[redacted]	SAMPLER:	[redacted]
*CLIENT:	AECOM	*PM MOBILE:	[redacted]	SAMPLER MOBILE:	[redacted]
OFFICE (Invoiced Office)	Darwin	ALS QUOTE # (Client PO if blank)	SY/139/19 V3	PURCHASE ORDER NO	60676801 / 7.03.01
PROJECT NO /PROJECT		NT_0990_PFASOMP_25		SITE	Private Property
*INVOICE TO: (client default if nil)	[redacted]			☐ CC Invoice to PM	
*EMAIL REPORTS TO: (default to PM if blank)	[redacted]				

CoC # (if applicable)

BIOSECURITY

Country of Origin: (If not Australia)

Environmental Division Sydney
Work Order Reference
ES2501556

Telephone : +61-2-8784 8555

*** STORAGE REQUIREMENTS**
Please check box →
Standard Storage time from receipt of samples:
Waters - 3 weeks
Soils - 2 months
☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND**
Please check box →
(Not all tests can be expedited, contact Client Services for more information)
☐ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

***ANALYSIS REQUIRED**
(NB: ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

Comments:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solids(S) Water(W) Sediments (SD) Dust (D) Product (P) Biota (B) Biosolid (BS)	WATER: EP231X PFAS - Full Suite (31 analytes)	WATER: EP231X-LL PFAS - Full Suite (31 analytes) Low Level	Lab QC (additional bottles req.) Dup	MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
1	0990_POT112_250113		13/01/2025	2	W	X		☐	☐	
2	0990_POT128_250113		13/01/2025	2	W		X	☐	☐	
3	0990_POT113_250113		13/01/2025	2	W	X		☐	☐	
4	0990_POT129_250113		13/01/2025	2	W		X	☐	☐	
5	0990_OTH119_250113		13/01/2025	2	W		X	☐	☐	
6	0990_POT126_250113		13/01/2025	2	W		X	☐	☐	
7	0990_OTH117_250113		13/01/2025	2	W		X	☐	☐	
8	0990_POT125_250113		13/01/2025	2	W		X	☐	☐	
9	0990_POT130_250114		14/01/2025	2	W		X	☐	☐	
10	0990_POT121_250113		13/01/2025	2	W	X		☐	☐	

Subcon (Forward Lab) / Split WO
Lab / Analysis: NMI
Organised By / Date:
Relinquished By / Date:
Connote / Courier: QC pwd
WO No: ES2501556
Attached By PO / Internal Sheet:

23 JAN 2025 14:39
Ph (C)
23 JAN 2025 14:39
1

Receipt Detail (Lab Use ONLY)
Chilling Method: Ice / Ice Bricks / None; Frozen / Melted / Frozen / Thawed
Sample Temp at Receipt: °C °C °C
Security Seal Intact (circle): Yes / No / N/A(None)
Carrier Details: ☐ Courier/Post ☐ Client
Con Note #
Packaging (Circle): Hard Esky, Foam Esky, Box/Bag/Other
Count: # # #

Relinquished by: [redacted]	Signature	Date/Time: 11:26 21/1	Received by: [redacted]	Signature	Date/Time: 11:26 21/1
Relinquished by: [redacted]	Signature	Date/Time:	Received by: [redacted]	Signature	Date/Time: 22/1/25 1130

Mandatory Fields	CHAIN OF CUSTODY				Page 2 of 4
CLIENT CODE		*PROJECT MANAGER:	[redacted]	SAMPLER:	[redacted]
*CLIENT:	AECOM	*PM MOBILE:	[redacted]	SAMPLER MOBILE:	[redacted]
OFFICE (Invoiced Office)	Darwin	ALS QUOTE # (Client EL if blank)	SY/139/19 V3	PURCHASE ORDER NO	60676801 / 7.03.01
*PROJECT NO /PROJECT		NT_0990_PFASOMP_25		SITE:	Private Property

CoC # (if applicable)

*INVOICE TO: (client default if no) [redacted] ☐ CC invoice to PM

BIOSECURITY

Country of Origin

*EMAIL REPORTS TO: (default to PM if blank) [redacted]

***ANALYSIS REQUIRED**

(NB: ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

*** STORAGE REQUIREMENTS**
Please check box →
☐ Standard Storage
☐ Extended Storage
Standard Storage time from receipt of samples:
Waters - 3 weeks
Soils - 2 months
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND**
Please check box →
☐ 5 - days (no surcharge)
☐ 3 day (~15%)
☐ 2 day (~30%)
☐ 1 day (~50%)
(Not all tests can be expedited, contact Client Services for more information)

WO Sticker to go here (ALS use only)

Comments

ALS Use Lab ID	Sample ID	Depth	Date/Time	No. Bott	MATRIX Soil/Solid(S) Water(W) Sediment (SD), Dust (D) Product (P), Biota (B)	WATER EP231X PFAS Full Suite (31 analytes)	WATER EP231X-LL PFAS - Full Suite (31 analytes) Low Level										Lab QC (additional) Dup	MS	Additional Information (Comment on hazards - e.g. asbestos, known high contamination)
11	0990_POT120_250114		14/01/2024	2	W	X											☐	☐	
12	0990_POT196_250114		14/01/2024	2	W		X										☐	☐	
13	0990_POT201_250114		14/01/2024	2	W		X										☐	☐	
14	0990_POT124_250114		14/01/2024	2	W		X										☐	☐	
15	0990_POT114_250114		14/01/2024	2	W	X											☐	☐	
16	0990_POT127_250114		14/01/2024	2	W		X										☐	☐	
17	0990_DUP128_250114		14/01/2024	2	W		X										☐	☐	
18	0990_QC100_250113		13/01/2025	2	W	X											☐	☐	
	0990_QC200_250113		13/01/2025	2	W	X											☐	☐	Pls forward to NMI
19	0990_QC300_240113		13/01/2025	2	W	X											☐	☐	

N25/001001

Receipt Detail (Lab use)	Chilling Method: Frozen / Chilled / Ice Bricks / Frozen / Frozen / None	Sample Temp at Receipt °C °C °C	Security Seal Intact (circle) Yes / No / N/A/None	Carrier Details Con Note #	☐ Courier/Post ☐ Client	Packaging (Circle) Count	Hard Esky / Foam Esky / Roll Bag/Other # #
Relinquished by	Signature	Date/Time	Received by [redacted]	Signature [redacted]	Date/Time 21/1/25	NS Qte	
Relinquished by	Signature	Date/Time	Received by [redacted]	Signature	Date/Time 22/1/25	1030	

Mandatory Fields	CHAIN OF CUSTODY					Page 3 of 4
CLIENT CODE:		*PROJECT MANAGER:	[redacted]	SAMPLER:	[redacted]	
*CLIENT:	AECOM	*PM MOBILE:	[redacted]	SAMPLER MOBILE:	[redacted]	CoC # (if applicable)
OFFICE (Invoiced Office)	Darwin	ALS QUOTE # (Client PO if blank)	SY/139/19 V3	PURCHASE ORDER NO.:	60676801 / 7.03.01	
PROJECT NO./PROJECT		NT_0990_PFASOMP_25		SITE:	Private Property	

*INVOICE TO: (client default if blank) [redacted] ☐ CC Invoice to PM

*EMAIL REPORTS TO: (default to PM if blank) [redacted]

BIOSECURITY

Country of Origin:

WO Sticker to go here. (ALS use only)

*** STORAGE REQUIREMENTS**
Please check box →
Standard Storage time from receipt of samples:
Waters - 3 weeks
Soils - 2 months

☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND**
Please check box →
(Not all tests can be expedited, contact Client Services for more information)

☐ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

***ANALYSIS REQUIRED**
(NB: ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

Comments:

ALS Use Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX Soil/Solid(S) Water(W) Sediments(SD) Dust(D) Product(P) Biota(B)	WATER - EP231X PFAS - Full Suite (31 analytes)	WATER - EP231X-LL PFAS - Full Suite (31 analytes) Low Level											Lab QC (additional) Dup	Lab QC (additional) MS	Additional Information (Comment on hazards e.g., asbestos contamination)
20	0990_MW808_250115		15/01/2024	2	W	X												☐	☐	
21	0990_MW809_250115		15/01/2024	2	W	X												☐	☐	
22	0990_MW810_250115		15/01/2024	2	W	X												☐	☐	
23	0990_MW811_250115		15/01/2024	2	W	X												☐	☐	
24	0990_MW812_250115		15/01/2024	2	W	X												☐	☐	
25	0990_MW813_250115		15/01/2024	2	W	X												☐	☐	
26	0990_QC302_250115		15/01/2024	2	W	X												☐	☐	
27	0990_QC402_250115		15/01/2024	2	W	X												☐	☐	
28	0990_POT131_250116		16/01/2025	2	W		X											☐	☐	
29																		☐	☐	

Receipt Detail (Lab Use)	Chilling Method: Ice / Frozen / Melted; Ice Bricks / Frozen / Thawed; None	Sample Temp at Receipt: °C °C °C	Security Seal Intact (circle): Yes / No / NA(None)	Carrier Details: Consignment Note #: ☐ Courier/Post ☐ Client	Packaging (Circle) Count: Hard Esky / Foam Esky

Relinquished by:	Signature:	Date/Time:	Received by:	Signature:	Date/Time: 21/1 · 11:26
Relinquished by:	Signature:	Date/Time:	Received by: [redacted]	Signature:	Date/Time: 22/1/25 1130

Mandatory Fields	CHAIN OF CUSTODY			Page 4 of 4
CLIENT CODE:	*PROJECT MANAGER:	[redacted]	SAMPLER:	[redacted]
*CLIENT: AECOM	*PM MOBILE:	[redacted]	SAMPLER MOBILE:	[redacted]
OFFICE: (Invoiced Office) Darwin	ALS QUOTE # (Client PL if blank)	SY/139/19 V3	PURCHASE ORDER NO:	60676801 / 7.03.01
PROJECT NO./PROJECT	NT_0990_PFASOMP_25		SITE:	Private Property

*INVOICE TO: (client default if nil) [redacted] ☐ CC Invoice to PM

BIOSECURITY

*EMAIL REPORTS TO: (default to PM if blank) [redacted]

Country of Origin:

*** STORAGE REQUIREMENTS**
Please check box →
Standard Storage time from receipt of samples:
Waters - 3 weeks
Soils - 2 months
☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND**
Please check box →
(Not all tests can be expedited, contact Client Services for more information)
☐ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

***ANALYSIS REQUIRED**
(NB: ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

WO Sticker to go. (ALS use only)

Comments:

ALS Use Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D) Product (P), Biota (B)	WATER - EP231X PFAS Full Suite (31 analytes)	WATER - EP231X LL PFAS - Full Suite (31 analytes) Low Level	Lab QC (additional) Dup	MS	Additional (Comment on hazards - e.g. contam)
29	0990_QC400_250113		13/01/2025	2	W	X		☐	☐	
30	0990_QC500_250113		13/01/2025	2	W	X		☐	☐	
31	0990_QC101_250114		14/01/2024	2	W	X		☐	☐	
N25/001002	0990_QC201_250114		14/01/2024	2	W	X		☐	☐	Pls forwar
32	0990_QC102_250114		14/01/2024	2	W	X		☐	☐	
N25/001003	0990_QC202_250114		14/01/2024	2	W	X		☐	☐	Pls forwar
33	0990_QC301_250114		14/01/2024	2	W	X		☐	☐	
34	0990_QC401_250114		14/01/2024	2	W	X		☐	☐	
[illegible]	0990_SW153_250113		13/01/2024	2	W	X		☐	☐	Extra for
35	0990_SW108_250113		13/01/2024	2	W	X		☐	☐	

Receipt Detail (Lab Use)	Chilling Methods: Ice / Ice Bricks / None; Frozen / Melted; Frozen / Thawed	Sample Temp at Receipt: °C °C °C	Security Seal Intact (circle): Yes / No / N/A(none)	Carrier Details: Consignment # ☐ Courier/Post ☐ Client	Packaging (Circle): Hard Esky / Foam; Count:

Relinquished by	Signature	Date/Time	Received by [redacted]
Relinquished by	Signature	Date/Time	Received by [redacted]

Date/Time 22/1 11:26
Date/Time 22/1/25 13

DRAFT

Appendix F

Lab Reports

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB2440154**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 75362	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PP QC'S NOVEMBER		
Sampler	: [redacted]		

Dates

Date Samples Received	: 19-Nov-2024 11:10	Issue Date	: 20-Nov-2024
Client Requested Due Date	: 27-Nov-2024	Scheduled Reporting Date	: **27-Nov-2024**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 3.7°C, 9.2°C, 1.8°C - Ice present
Receipt Detail	: ESKY LARGE	No. of samples received / analysed	: 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Unless otherwise stated, analytical work for this work order will be conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818.
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
EB2440154-001	11-Nov-2024 16:55	0990_QC200_241111	✓
EB2440154-002	11-Nov-2024 17:40	0990_QC201_241111	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **EB2440154**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 19-Nov-2024 11:10
Order number	: 60676801/	Date Analysis Commenced	: 21-Nov-2024
C-O-C number	: 75362	Issue Date	: 25-Nov-2024 14:18
Sampler	: [redacted]		
Site	: PP QC'S NOVEMBER		
Quote number	: ES24AECOMAU0010		
No. of samples received	: 2		
No. of samples analysed	: 2		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X PFAS: Samples '0990_QC200_241111' (EB2440154-001) and '0990_QC201_241111' (EB2440154-002) showed matrix interference indicated by internal standard recovery outside of control limits. This is deemed acceptable as all associated analytes are less than the limit of reporting.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC200_241111	0990_QC201_241111	----	----	----
			Sampling date / time	11-Nov-2024 16:55	11-Nov-2024 17:40	----	----	----
Compound	CAS Number	LOR	Unit	EB2440154-001	EB2440154-002	--------	--------	--------
				Result	Result	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC200_241111	0990_QC201_241111	----	----	----
			Sampling date / time	11-Nov-2024 16:55	11-Nov-2024 17:40	----	----	----
Compound	CAS Number	LOR	Unit	EB2440154-001	EB2440154-002	--------	--------	--------
				Result	Result	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**127**	**122**	----	----	----
13C8-PFOA	----	0.02	%	**128**	**129**	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EB2440154**	Page	: 1 of 6
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 19-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 21-Nov-2024
C-O-C number	: 75362	Issue Date	: 25-Nov-2024
Sampler	: [redacted]		
Site	: PP QC'S NOVEMBER		
Quote number	: ES24AECOMAU0010		
No. of samples received	: 2		
No. of samples analysed	: 2		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6206351)									
EB2439587-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.06	0.06	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.14	0.15	8.2	0% - 50%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6206351)									
EB2439587-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.03	0.02	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	0.08	0.08	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	0.05	0.05	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6206351)									
EB2439587-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6206351) - continued									
EB2439587-001	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6206351)									
EB2439587-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6206351)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	82.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	80.8	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	71.0	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	79.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	88.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	88.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6206351)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	77.3	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	90.4	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	73.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	72.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	106	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	90.2	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	92.6	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	92.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	98.8	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	103	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	79.2	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6206351)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	76.2	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	76.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	64.7	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	85.4	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	81.1	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	78.0	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	75.4	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6206351)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6206351) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	64.9	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.2378 µg/L	86.2	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	105	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.241 µg/L	99.8	64.2	133

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6206351)							
EB2439704-015	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.2218 µg/L	87.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.235 µg/L	84.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.2352 µg/L	77.0	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.238 µg/L	84.9	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.232 µg/L	91.1	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.241 µg/L	91.8	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6206351)							
EB2439704-015	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	82.7	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	89.8	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	80.8	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	74.4	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	104	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	87.0	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	91.5	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	87.8	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	88.1	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	94.1	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	77.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6206351)							
EB2439704-015	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	82.0	59.0	135
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	70.8	70.0	130
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	70.5	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	77.9	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6206351) - continued							
EB2439704-015	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	79.5	70.0	130
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	83.1	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	76.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6206351)							
EB2439704-015	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.234 µg/L	95.5	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.2378 µg/L	96.8	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.24 µg/L	94.8	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.2415 µg/L	83.4	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2440154**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 19-Nov-2024
Site	: PP QC'S NOVEMBER	Issue Date	: 25-Nov-2024
Sampler	: [redacted]	No. of samples received	: 2
Order number	: 60676801/	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0990_QC200_241111,	0990_QC201_241111	**11-Nov-2024**	**22-Nov-2024**	10-May-2025	✓	**24-Nov-2024**	10-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X)								
0990_QC200_241111,	0990_QC201_241111	**11-Nov-2024**	**22-Nov-2024**	10-May-2025	✓	**24-Nov-2024**	10-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X)								
0990_QC200_241111,	0990_QC201_241111	**11-Nov-2024**	**22-Nov-2024**	10-May-2025	✓	**24-Nov-2024**	10-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X)								
0990_QC200_241111,	0990_QC201_241111	**11-Nov-2024**	**22-Nov-2024**	10-May-2025	✓	**24-Nov-2024**	10-May-2025	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X)								
0990_QC200_241111,	0990_QC201_241111	**11-Nov-2024**	**22-Nov-2024**	10-May-2025	✓	**24-Nov-2024**	10-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2436471**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801	Quote number	: ES2024AECOMAU0010
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Tindal		
Sampler	: [redacted]		

Dates

Date Samples Received	: 12-Nov-2024 11:00	Issue Date	: 18-Nov-2024
Client Requested Due Date	: 18-Nov-2024	Scheduled Reporting Date	: **18-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 14.0'C 15.9'C 15.7'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **18/11/2024: This is an updated SRN reflecting a change to the Project Reference and PO.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2436471-001	07-Nov-2024 00:00	0990_OTH113_241107	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2436471**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 12-Nov-2024 11:00
Order number	: 60676801	Date Analysis Commenced	: 14-Nov-2024
C-O-C number	: ----	Issue Date	: 18-Nov-2024 14:38
Sampler	: [redacted]		
Site	: Tindal		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_OTH113_241107	----	----	----	----
			Sampling date / time	07-Nov-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436471-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.08**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.11**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_OTH113_241107	----	----	----	----
			Sampling date / time	07-Nov-2024 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436471-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.19**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.19**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.19**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**97.8**	----	----	----	----
13C8-PFOA	----	0.02	%	**98.9**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2436471**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 12-Nov-2024
Order number	: 60676801	Date Analysis Commenced	: 14-Nov-2024
C-O-C number	: ----	Issue Date	: 18-Nov-2024
Sampler	: [redacted]		
Site	: Tindal		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6188119)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	96.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	91.2	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	84.5	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	102	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	93.6	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	88.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6188119)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	100	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	98.9	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	106	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	99.4	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	99.5	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	101	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	104	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	103	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6188119)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	101	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	106	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	88.3	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	95.7	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	99.7	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	107	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	96.3	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6188119)								

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2436471**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 12-Nov-2024
Site	: Tindal	Issue Date	: 18-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH113_241107	**07-Nov-2024**	**14-Nov-2024**	06-May-2025	✓	**18-Nov-2024**	06-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH113_241107	**07-Nov-2024**	**14-Nov-2024**	06-May-2025	✓	**18-Nov-2024**	06-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_OTH113_241107	**07-Nov-2024**	**14-Nov-2024**	06-May-2025	✓	**18-Nov-2024**	06-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH113_241107	**07-Nov-2024**	**14-Nov-2024**	06-May-2025	✓	**18-Nov-2024**	06-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_OTH113_241107	**07-Nov-2024**	**14-Nov-2024**	06-May-2025	✓	**18-Nov-2024**	06-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	6	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	6	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6188119) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	98.0	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	97.5	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	91.3	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	80.7	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2436902**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 75349	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT120		
Sampler	: [redacted]		

Dates

Date Samples Received	: 15-Nov-2024 11:00	Issue Date	: 18-Nov-2024
Client Requested Due Date	: 22-Nov-2024	Scheduled Reporting Date	: **22-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 10.7'C DRW 1.7'C 2.7'C 2.7'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2436902-001	12-Nov-2024 16:19	0990_POT120_241112	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2436902**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75349	Issue Date	: 20-Nov-2024 17:46
Sampler	: [redacted]		
Site	: POT120		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT120_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 16:19	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436902-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.02**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.03**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT120_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 16:19	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436902-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.05**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.05**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.05**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**97.0**	----	----	----	----
13C8-PFOA	----	0.02	%	**99.3**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2436902**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75349	Issue Date	: 20-Nov-2024
Sampler	: [redacted]		
Site	: POT120		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734) - continued									
ES2437293-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.02	0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	0.02	66.7	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	76.9	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	82.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	78.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.3	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	88.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	87.0	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	84.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	86.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	82.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	91.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	87.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.1	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	94.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	96.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	112	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	90.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	98.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.2	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	89.9	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	81.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	84.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	97.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	90.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	76.1	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	78.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	86.6	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	79.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	97.9	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	85.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	74.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	88.1	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	83.7	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	90.5	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	86.5	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	91.1	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	90.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	100	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	96.1	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	98.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	117	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	92.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	103	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.2	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	85.4	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734) - continued							
ES2437293-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	94.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	98.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	87.5	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	80.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	87.5	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	84.7	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	79.9	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2436902**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Site	: POT120	Issue Date	: 20-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2436904**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 75351	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT130		
Sampler	: [redacted]		

Dates

Date Samples Received	: 15-Nov-2024 11:00	Issue Date	: 18-Nov-2024
Client Requested Due Date	: 22-Nov-2024	Scheduled Reporting Date	: **22-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 10.7'C DRW 1.7'C 2.7'C 2.7'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2436904-001	12-Nov-2024 17:11	0990_POT130_2411	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2436904**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75351	Issue Date	: 20-Nov-2024 17:46
Sampler	: [redacted]		
Site	: POT130		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_POT130_2411	----	----	----	----
			Sampling date / time	12-Nov-2024 17:11	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436904-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_POT130_2411	----	----	----	----
			Sampling date / time	12-Nov-2024 17:11	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436904-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	107	----	----	----	----
13C8-PFOA	----	0.02	%	99.9	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2436904**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75351	Issue Date	: 20-Nov-2024
Sampler	: [redacted]		
Site	: POT130		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734) - continued									
ES2437293-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.02	0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	0.02	66.7	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	76.9	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	82.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	78.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.3	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	88.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	87.0	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	84.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	86.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	82.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	91.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	87.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.1	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	94.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	96.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	112	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	90.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	98.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.2	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	89.9	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	81.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	84.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	97.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	90.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	76.1	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	78.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	86.6	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	79.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	97.9	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	85.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	74.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	88.1	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	83.7	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	90.5	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	86.5	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	91.1	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	90.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	100	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	96.1	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	98.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	117	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	92.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	103	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.2	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	85.4	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734) - continued							
ES2437293-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	94.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	98.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	87.5	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	80.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	87.5	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	84.7	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	79.9	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2436904**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Site	: POT130	Issue Date	: 20-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT130_2411	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT130_2411	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT130_2411	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT130_2411	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT130_2411	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2436906**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 75352	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT125		
Sampler	: [redacted]		

Dates

Date Samples Received	: 15-Nov-2024 11:00	Issue Date	: 18-Nov-2024
Client Requested Due Date	: 22-Nov-2024	Scheduled Reporting Date	: **22-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 10.7'C DRW 1.7'C 2.7'C 2.7'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2436906-001	12-Nov-2024 16:31	0990_POT125_241112	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2436906**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75352	Issue Date	: 20-Nov-2024 17:46
Sampler	: [redacted]		
Site	: POT125		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_POT125_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 16:31	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436906-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_POT125_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 16:31	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436906-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**99.5**	----	----	----	----
13C8-PFOA	----	0.02	%	**99.1**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2436906**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75352	Issue Date	: 20-Nov-2024
Sampler	: [redacted]		
Site	: POT125		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734) - continued									
ES2437293-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.02	0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	0.02	66.7	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	76.9	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	82.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	78.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.3	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	88.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	87.0	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	84.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	86.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	82.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	91.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	87.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.1	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	94.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	96.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	112	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	90.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	98.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.2	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	89.9	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	81.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	84.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	97.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	90.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	76.1	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	78.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	86.6	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	79.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	97.9	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	85.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	74.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	88.1	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	83.7	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	90.5	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	86.5	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	91.1	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	90.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	100	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	96.1	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	98.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	117	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	92.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	103	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.2	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	85.4	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734) - continued							
ES2437293-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	94.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	98.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	87.5	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	80.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	87.5	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	84.7	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	79.9	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2436906**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Site	: POT125	Issue Date	: 20-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT125_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT125_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT125_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT125_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT125_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2436909**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 75447	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT127		
Sampler	: [redacted]		

Dates

Date Samples Received	: 15-Nov-2024 11:00	Issue Date	: 18-Nov-2024
Client Requested Due Date	: 22-Nov-2024	Scheduled Reporting Date	: **22-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 10.7'C DRW 1.7'C 2.7'C 2.7'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2436909-001	12-Nov-2024 17:33	0990_POT127_241112	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2436909**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75447	Issue Date	: 20-Nov-2024 17:46
Sampler	: [redacted]		
Site	: POT127		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT127_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 17:33	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436909-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT127_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 17:33	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436909-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**99.0**	----	----	----	----
13C8-PFOA	----	0.02	%	**101**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2436909**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75447	Issue Date	: 20-Nov-2024
Sampler	: [redacted]		
Site	: POT127		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734) - continued									
ES2437293-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.02	0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	0.02	66.7	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	76.9	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	82.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	78.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.3	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	88.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	87.0	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	84.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	86.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	82.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	91.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	87.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.1	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	94.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	96.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	112	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	90.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	98.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.2	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	89.9	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	81.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	84.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	97.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	90.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	76.1	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	78.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	86.6	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	79.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	97.9	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	85.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	74.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	88.1	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	83.7	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	90.5	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	86.5	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	91.1	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	90.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	100	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	96.1	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	98.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	117	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	92.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	103	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.2	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	85.4	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734) - continued							
ES2437293-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	94.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	98.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	87.5	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	80.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	87.5	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	84.7	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	79.9	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2436909**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Site	: POT127	Issue Date	: 20-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT127_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT127_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT127_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT127_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT127_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2436912**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 75448	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: OTH118		
Sampler	: [redacted]		

Dates

Date Samples Received	: 15-Nov-2024 11:00	Issue Date	: 18-Nov-2024
Client Requested Due Date	: 22-Nov-2024	Scheduled Reporting Date	: **22-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 10.7'C DRW 1.7'C 2.7'C 2.7'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2436912-001	12-Nov-2024 17:36	0990_OTH118_241112	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2436912**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75448	Issue Date	: 20-Nov-2024 17:47
Sampler	: [redacted]		
Site	: OTH118		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_OTH118_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 17:36	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436912-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_OTH118_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 17:36	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436912-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**97.7**	----	----	----	----
13C8-PFOA	----	0.02	%	**97.9**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2436912**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75448	Issue Date	: 20-Nov-2024
Sampler	: [redacted]		
Site	: OTH118		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734) - continued									
ES2437293-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.02	0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	0.02	66.7	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	76.9	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	82.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	78.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.3	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	88.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	87.0	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	84.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	86.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	82.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	91.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	87.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.1	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	94.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	96.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	112	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	90.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	98.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.2	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	89.9	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	81.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	84.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	97.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	90.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	76.1	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	78.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	86.6	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	79.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	97.9	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	85.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	74.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	88.1	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	83.7	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	90.5	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	86.5	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	91.1	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	90.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	100	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	96.1	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	98.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	117	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	92.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	103	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.2	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	85.4	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734) - continued							
ES2437293-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	94.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	98.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	87.5	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	80.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	87.5	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	84.7	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	79.9	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2436912**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Site	: OTH118	Issue Date	: 20-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH118_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH118_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_OTH118_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH118_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_OTH118_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2436913**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 75334	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT168		
Sampler	: [redacted]		

Dates

Date Samples Received	: 15-Nov-2024 11:00	Issue Date	: 18-Nov-2024
Client Requested Due Date	: 22-Nov-2024	Scheduled Reporting Date	: **22-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 10.7'C DRW 1.7'C 2.7'C 2.7'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2436913-001	12-Nov-2024 10:12	0990_POT168_241112	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2436913**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75334	Issue Date	: 20-Nov-2024 17:48
Sampler	: [redacted]		
Site	: POT168		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT168_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 10:12	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436913-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT168_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 10:12	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436913-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**99.5**	----	----	----	----
13C8-PFOA	----	0.02	%	**99.4**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2436913**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75334	Issue Date	: 20-Nov-2024
Sampler	: [redacted]		
Site	: POT168		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734) - continued									
ES2437293-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.02	0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	0.02	66.7	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	76.9	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	82.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	78.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.3	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	88.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	87.0	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	84.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	86.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	82.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	91.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	87.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.1	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	94.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	96.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	112	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	90.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	98.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.2	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	89.9	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	81.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	84.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	97.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	90.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	76.1	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	78.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	86.6	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	79.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	97.9	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	85.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	74.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	88.1	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	83.7	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	90.5	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	86.5	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	91.1	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	90.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	100	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	96.1	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	98.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	117	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	92.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	103	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.2	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	85.4	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734) - continued							
ES2437293-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	94.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	98.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	87.5	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	80.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	87.5	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	84.7	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	79.9	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2436913**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Site	: POT168	Issue Date	: 20-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT168_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT168_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT168_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT168_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT168_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2436914**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 75335	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT126		
Sampler	: [redacted]		

Dates

Date Samples Received	: 15-Nov-2024 11:00	Issue Date	: 18-Nov-2024
Client Requested Due Date	: 22-Nov-2024	Scheduled Reporting Date	: **22-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 10.7'C DRW 1.7'C 2.7'C 2.7'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2436914-001	12-Nov-2024 09:47	0990_POT126_241112	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2436914**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75335	Issue Date	: 20-Nov-2024 17:49
Sampler	: [redacted]		
Site	: POT126		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT126_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 09:47	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436914-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT126_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 09:47	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436914-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	102	----	----	----	----
13C8-PFOA	----	0.02	%	102	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2436914**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75335	Issue Date	: 20-Nov-2024
Sampler	: [redacted]		
Site	: POT126		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734) - continued									
ES2437293-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.02	0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	0.02	66.7	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	76.9	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	82.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	78.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.3	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	88.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	87.0	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	84.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	86.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	82.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	91.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	87.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.1	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	94.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	96.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	112	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	90.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	98.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.2	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	89.9	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	81.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	84.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	97.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	90.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	76.1	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	78.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	86.6	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	79.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	97.9	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	85.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	74.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	88.1	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	83.7	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	90.5	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	86.5	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	91.1	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	90.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	100	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	96.1	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	98.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	117	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	92.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	103	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.2	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	85.4	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734) - continued							
ES2437293-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	94.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	98.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	87.5	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	80.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	87.5	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	84.7	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	79.9	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2436914**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	[redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Site	: POT126	Issue Date	: 20-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT126_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT126_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT126_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT126_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT126_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2436915**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 75338	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: OTH117		
Sampler	: [redacted]		

Dates

Date Samples Received	: 15-Nov-2024 11:00	Issue Date	: 18-Nov-2024
Client Requested Due Date	: 22-Nov-2024	Scheduled Reporting Date	: **22-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 10.7'C DRW 1.7'C 2.7'C 2.7'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2436915-001	12-Nov-2024 10:15	0990_OTH117_241112	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2436915**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75338	Issue Date	: 20-Nov-2024 17:47
Sampler	: [redacted]		
Site	: OTH117		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_OTH117_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 10:15	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436915-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_OTH117_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 10:15	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436915-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	102	----	----	----	----
13C8-PFOA	----	0.02	%	102	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2436915**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75338	Issue Date	: 20-Nov-2024
Sampler	: [redacted]		
Site	: OTH117		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734) - continued									
ES2437293-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.02	0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	0.02	66.7	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	76.9	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	82.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	78.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.3	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	88.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	87.0	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	84.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	86.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	82.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	91.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	87.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.1	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	94.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	96.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	112	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	90.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	98.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.2	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	89.9	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	81.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	84.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	97.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	90.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	76.1	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	78.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	86.6	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	79.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	97.9	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	85.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	74.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	88.1	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	83.7	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	90.5	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	86.5	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	91.1	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	90.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	100	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	96.1	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	98.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	117	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	92.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	103	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.2	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	85.4	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734) - continued							
ES2437293-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	94.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	98.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	87.5	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	80.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	87.5	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	84.7	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	79.9	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2436915**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	[redacted]
Contact	[redacted]	Telephone	[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Site	: OTH117	Issue Date	: 20-Nov-2024
Sampler	[redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH117_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH117_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_OTH117_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH117_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_OTH117_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2436916**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 75339	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT121		
Sampler	: [redacted]		

Dates

Date Samples Received	: 15-Nov-2024 11:00	Issue Date	: 18-Nov-2024
Client Requested Due Date	: 22-Nov-2024	Scheduled Reporting Date	: **22-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 10.7'C DRW 1.7'C 2.7'C 2.7'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2436916-001	12-Nov-2024 10:25	0990_POT121_241112	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2436916**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75339	Issue Date	: 20-Nov-2024 17:47
Sampler	: [redacted]		
Site	: POT121		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT121_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 10:25	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436916-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.02**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.02**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT121_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 10:25	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436916-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.04**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.04**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.04**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**99.1**	----	----	----	----
13C8-PFOA	----	0.02	%	**100**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2436916**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75339	Issue Date	: 20-Nov-2024
Sampler	: [redacted]		
Site	: POT121		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734) - continued									
ES2437293-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.02	0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	0.02	66.7	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	76.9	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	82.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	78.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.3	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	88.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	87.0	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	84.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	86.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	82.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	91.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	87.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.1	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	94.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	96.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	112	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	90.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	98.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.2	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	89.9	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	81.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	84.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	97.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	90.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	76.1	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	78.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	86.6	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	79.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	97.9	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	85.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	74.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	88.1	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	83.7	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	90.5	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	86.5	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	91.1	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	90.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	100	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	96.1	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	98.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	117	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	92.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	103	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.2	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	85.4	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734) - continued							
ES2437293-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	94.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	98.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	87.5	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	80.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	87.5	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	84.7	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	79.9	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2436916**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Site	: POT121	Issue Date	: 20-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT121_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT121_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT121_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT121_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT121_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2436917**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 75346	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT124		
Sampler	: [redacted]		

Dates

Date Samples Received	: 15-Nov-2024 11:00	Issue Date	: 18-Nov-2024
Client Requested Due Date	: 22-Nov-2024	Scheduled Reporting Date	: **22-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 10.7'C DRW 1.7'C 2.7'C 2.7'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2436917-001	12-Nov-2024 12:19	0990_POT124_241112	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2436917**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75346	Issue Date	: 20-Nov-2024 17:48
Sampler	: [redacted]		
Site	: POT124		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_POT124_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 12:19	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436917-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_POT124_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 12:19	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436917-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	101	----	----	----	----
13C8-PFOA	----	0.02	%	104	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2436917**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75346	Issue Date	: 20-Nov-2024
Sampler	: [redacted]		
Site	: POT124		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734) - continued									
ES2437293-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.02	0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	0.02	66.7	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	76.9	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	82.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	78.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.3	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	88.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	87.0	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	84.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	86.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	82.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	91.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	87.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.1	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	94.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	96.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	112	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	90.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	98.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.2	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	89.9	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	81.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	84.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	97.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	90.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	76.1	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	78.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	86.6	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	79.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	97.9	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	85.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	74.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	88.1	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	83.7	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	90.5	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	86.5	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	91.1	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	90.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	100	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	96.1	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	98.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	117	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	92.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	103	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.2	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	85.4	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734) - continued							
ES2437293-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	94.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	98.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	87.5	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	80.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	87.5	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	84.7	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	79.9	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2436917**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Site	: POT124	Issue Date	: 20-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT124_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT124_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT124_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT124_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT124_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2436919**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 75348	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT201		
Sampler	: [redacted]		

Dates

Date Samples Received	: 15-Nov-2024 11:00	Issue Date	: 18-Nov-2024
Client Requested Due Date	: 22-Nov-2024	Scheduled Reporting Date	: **22-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 10.7'C DRW 1.7'C 2.7'C 2.7'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2436919-001	12-Nov-2024 10:54	0990_POT201_241112	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2436919**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: GPO BOX 3175 DARWIN NT, AUSTRALIA 0801	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75348	Issue Date	: 20-Nov-2024 17:50
Sampler	: [redacted]		
Site	: POT201		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT201_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 10:54	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436919-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT201_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 10:54	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436919-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	103	----	----	----	----
13C8-PFOA	----	0.02	%	101	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2436919**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75348	Issue Date	: 20-Nov-2024
Sampler	: [redacted]		
Site	: POT201		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.02	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	0.02	0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6195734) - continued									
ES2437293-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437293-003	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6195734)									
ES2437293-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.02	0.02	0.0	No Limit
ES2437293-003	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	0.04	0.02	66.7	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	76.9	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	82.4	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	78.1	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.3	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	88.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	80.7	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	87.0	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	84.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	86.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	82.9	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	91.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	87.3	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.1	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	94.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	96.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	112	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	90.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	98.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	95.0	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.2	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.2	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	89.9	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	81.7	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	84.8	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	97.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	90.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	76.1	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	78.4	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	86.6	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	79.8	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	97.9	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	85.2	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	74.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	89.5	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	88.1	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	83.7	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	90.5	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	86.5	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	91.1	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	90.6	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	100	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	96.1	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	98.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	117	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	92.6	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	103	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.2	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	85.4	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195734) - continued							
ES2437293-002	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	94.5	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	98.4	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	87.5	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195734)							
ES2437293-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	80.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	87.5	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	84.7	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	79.9	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2436919**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Site	: POT201	Issue Date	: 20-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT201_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT201_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT201_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT201_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT201_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2436920**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 75350	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT114		
Sampler	: [redacted]		

Dates

Date Samples Received	: 15-Nov-2024 11:00	Issue Date	: 18-Nov-2024
Client Requested Due Date	: 22-Nov-2024	Scheduled Reporting Date	: **22-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 10.7'C DRW 1.7'C 2.7'C 2.7'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2436920-001	12-Nov-2024 12:31	0990_POT114_241112	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2436920**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75350	Issue Date	: 22-Nov-2024 14:33
Sampler	: [redacted]		
Site	: POT114		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT114_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 12:31	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436920-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT114_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 12:31	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436920-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**97.6**	----	----	----	----
13C8-PFOA	----	0.02	%	**99.3**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2436920**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75350	Issue Date	: 22-Nov-2024
Sampler	: [redacted]		
Site	: POT114		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195735)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	84.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	102	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	87.3	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	92.9	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	95.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	84.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195735)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	92.7	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	81.9	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.9	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	99.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	89.5	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	98.2	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	89.9	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	84.3	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	87.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	102	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195735)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	97.4	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	91.8	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	100	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.3	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.6	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	95.3	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	93.9	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195735)								

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195735) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	83.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	89.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	78.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	74.3	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2436920**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Site	: POT114	Issue Date	: 22-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT114_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT114_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT114_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT114_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT114_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2436921**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 75410	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT198		
Sampler	: [redacted]		

Dates

Date Samples Received	: 15-Nov-2024 11:00	Issue Date	: 18-Nov-2024
Client Requested Due Date	: 22-Nov-2024	Scheduled Reporting Date	: **22-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 10.7'C DRW 1.7'C 2.7'C 2.7'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2436921-001	12-Nov-2024 10:38	0990_POT198_241112	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2436921**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75410	Issue Date	: 21-Nov-2024 14:59
Sampler	: [redacted]		
Site	: POT198		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT198_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 10:38	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436921-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT198_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 10:38	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436921-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**105**	----	----	----	----
13C8-PFOA	----	0.02	%	**112**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2436921**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75410	Issue Date	: 21-Nov-2024
Sampler	: [redacted]		
Site	: POT198		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195735)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	84.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	102	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	87.3	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	92.9	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	95.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	84.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195735)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	92.7	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	81.9	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.9	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	99.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	89.5	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	98.2	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	89.9	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	84.3	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	87.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	102	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195735)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	97.4	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	91.8	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	100	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.3	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.6	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	95.3	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	93.9	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195735)								

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195735) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	83.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	89.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	78.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	74.3	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2436921**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Site	: POT198	Issue Date	: 21-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT198_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT198_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT198_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT198_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT198_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2436922**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 75303	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: oth119		
Sampler	: [redacted]		

Dates

Date Samples Received	: 15-Nov-2024 11:00	Issue Date	: 18-Nov-2024
Client Requested Due Date	: 22-Nov-2024	Scheduled Reporting Date	: **22-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 10.7'C DRW 1.7'C 2.7'C 2.7'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2436922-001	11-Nov-2024 16:53	0990_OTH119_241111	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2436922**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75303	Issue Date	: 21-Nov-2024 15:00
Sampler	: [redacted]		
Site	: oth119		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_OTH119_241111	----	----	----	----
			Sampling date / time	11-Nov-2024 16:53	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436922-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_OTH119_241111	----	----	----	----
			Sampling date / time	11-Nov-2024 16:53	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436922-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	103	----	----	----	----
13C8-PFOA	----	0.02	%	104	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2436922**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75303	Issue Date	: 21-Nov-2024
Sampler	: [redacted]		
Site	: oth119		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195735)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	84.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	102	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	87.3	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	92.9	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	95.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	84.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195735)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	92.7	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	81.9	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.9	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	99.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	89.5	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	98.2	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	89.9	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	84.3	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	87.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	102	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195735)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	97.4	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	91.8	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	100	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.3	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.6	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	95.3	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	93.9	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195735)								

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195735) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	83.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	89.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	78.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	74.3	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2436922**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Site	: oth119	Issue Date	: 21-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH119_241111	**11-Nov-2024**	**19-Nov-2024**	10-May-2025	✓	**20-Nov-2024**	10-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH119_241111	**11-Nov-2024**	**19-Nov-2024**	10-May-2025	✓	**20-Nov-2024**	10-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_OTH119_241111	**11-Nov-2024**	**19-Nov-2024**	10-May-2025	✓	**20-Nov-2024**	10-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_OTH119_241111	**11-Nov-2024**	**19-Nov-2024**	10-May-2025	✓	**20-Nov-2024**	10-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_OTH119_241111	**11-Nov-2024**	**19-Nov-2024**	10-May-2025	✓	**20-Nov-2024**	10-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2436923**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 75304	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT131		
Sampler	: [redacted]		

Dates

Date Samples Received	: 15-Nov-2024 11:00	Issue Date	: 18-Nov-2024
Client Requested Due Date	: 22-Nov-2024	Scheduled Reporting Date	: **22-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 10.7'C DRW 1.7'C 2.7'C 2.7'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2436923-001	12-Nov-2024 09:37	0990_POT131_241112	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2436923**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75304	Issue Date	: 21-Nov-2024 15:02
Sampler	: [redacted]		
Site	: POT131		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT131_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 09:37	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436923-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT131_241112	----	----	----	----
			Sampling date / time	12-Nov-2024 09:37	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436923-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	100	----	----	----	----
13C8-PFOA	----	0.02	%	101	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2436923**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	[redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75304	Issue Date	: 21-Nov-2024
Sampler	: [redacted]		
Site	: POT131		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195735)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	84.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	102	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	87.3	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	92.9	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	95.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	84.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195735)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	92.7	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	81.9	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.9	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	99.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	89.5	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	98.2	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	89.9	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	84.3	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	87.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	102	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195735)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	97.4	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	91.8	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	100	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.3	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.6	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	95.3	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	93.9	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195735)								

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195735) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	83.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	89.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	78.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	74.3	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2436923**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	[redacted]
Contact	[redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Site	: POT131	Issue Date	: 21-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT131_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT131_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT131_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT131_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT131_241112	**12-Nov-2024**	**19-Nov-2024**	11-May-2025	✓	**20-Nov-2024**	11-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2436924**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 75329	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT112		
Sampler	: [redacted]		

Dates

Date Samples Received	: 15-Nov-2024 11:00	Issue Date	: 18-Nov-2024
Client Requested Due Date	: 22-Nov-2024	Scheduled Reporting Date	: **22-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 10.7'C DRW 1.7'C 2.7'C 2.7'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2436924-001	11-Nov-2024 16:06	0990_POT112_241111	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2436924**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75329	Issue Date	: 21-Nov-2024 15:03
Sampler	: [redacted]		
Site	: POT112		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_241111	----	----	----	----
			Sampling date / time	11-Nov-2024 16:06	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436924-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.04**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.05**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_241111	----	----	----	----
			Sampling date / time	11-Nov-2024 16:06	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436924-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.09**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.09**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.09**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**102**	----	----	----	----
13C8-PFOA	----	0.02	%	**105**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2436924**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75329	Issue Date	: 21-Nov-2024
Sampler	: [redacted]		
Site	: POT112		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195735)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	84.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	102	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	87.3	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	92.9	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	95.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	84.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195735)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	92.7	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	81.9	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.9	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	99.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	89.5	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	98.2	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	89.9	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	84.3	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	87.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	102	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195735)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	97.4	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	91.8	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	100	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.3	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.6	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	95.3	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	93.9	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195735)								

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195735) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	83.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	89.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	78.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	74.3	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2436924**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	[redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Site	: POT112	Issue Date	: 21-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT112_241111	**11-Nov-2024**	**19-Nov-2024**	10-May-2025	✓	**20-Nov-2024**	10-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT112_241111	**11-Nov-2024**	**19-Nov-2024**	10-May-2025	✓	**20-Nov-2024**	10-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT112_241111	**11-Nov-2024**	**19-Nov-2024**	10-May-2025	✓	**20-Nov-2024**	10-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT112_241111	**11-Nov-2024**	**19-Nov-2024**	10-May-2025	✓	**20-Nov-2024**	10-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT112_241111	**11-Nov-2024**	**19-Nov-2024**	10-May-2025	✓	**20-Nov-2024**	10-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2436926**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 75330	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT128		
Sampler	: [redacted]		

Dates

Date Samples Received	: 15-Nov-2024 11:00	Issue Date	: 18-Nov-2024
Client Requested Due Date	: 22-Nov-2024	Scheduled Reporting Date	: **22-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 10.7'C DRW 1.7'C 2.7'C 2.7'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2436926-001	11-Nov-2024 16:17	0990_POT128_2411	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2436926**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75330	Issue Date	: 22-Nov-2024 14:34
Sampler	: [redacted]		
Site	: POT128		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT128_241111	----	----	----	----
			Sampling date / time	11-Nov-2024 16:17	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436926-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT128_241111	----	----	----	----
			Sampling date / time	11-Nov-2024 16:17	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436926-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**97.1**	----	----	----	----
13C8-PFOA	----	0.02	%	**93.9**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2436926**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75330	Issue Date	: 22-Nov-2024
Sampler	: [redacted]		
Site	: POT128		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6206288)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	78.9	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	91.5	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	83.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	96.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	85.5	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	77.4	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6206288)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	83.2	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	93.5	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	86.2	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	89.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	88.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	91.2	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	92.7	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	97.8	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	113	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	114	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	114	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6206288)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	84.7	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	107	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	92.4	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	94.4	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	96.0	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	87.1	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	78.2	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6206288)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6206288) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	83.9	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	75.2	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	94.9	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	74.4	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2436926**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Site	: POT128	Issue Date	: 22-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	1	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT128_241111	**11-Nov-2024**	**22-Nov-2024**	10-May-2025	✓	**22-Nov-2024**	10-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT128_241111	**11-Nov-2024**	**22-Nov-2024**	10-May-2025	✓	**22-Nov-2024**	10-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT128_241111	**11-Nov-2024**	**22-Nov-2024**	10-May-2025	✓	**22-Nov-2024**	10-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT128_241111	**11-Nov-2024**	**22-Nov-2024**	10-May-2025	✓	**22-Nov-2024**	10-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT128_241111	**11-Nov-2024**	**22-Nov-2024**	10-May-2025	✓	**22-Nov-2024**	10-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	1	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	1	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2436927**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 75332	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT129		
Sampler	: [redacted]		

Dates

Date Samples Received	: 15-Nov-2024 11:00	Issue Date	: 18-Nov-2024
Client Requested Due Date	: 22-Nov-2024	Scheduled Reporting Date	: **22-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 10.7'C DRW 1.7'C 2.7'C 2.7'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2436927-001	11-Nov-2024 16:38	0990_POT129_241111	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2436927**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: +[redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75332	Issue Date	: 22-Nov-2024 14:35
Sampler	: [redacted]		
Site	: POT129		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_POT129_241111	----	----	----	----
			Sampling date / time	11-Nov-2024 16:38	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436927-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.01**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_POT129_241111	----	----	----	----
			Sampling date / time	11-Nov-2024 16:38	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436927-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.01**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.01**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.01**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**98.8**	----	----	----	----
13C8-PFOA	----	0.02	%	**105**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2436927**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75332	Issue Date	: 22-Nov-2024
Sampler	: [redacted]		
Site	: POT129		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195735)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	84.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	102	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	87.3	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	92.9	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	95.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	84.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195735)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	92.7	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	81.9	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.9	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	99.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	89.5	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	98.2	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	89.9	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	84.3	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	87.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	102	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195735)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	97.4	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	91.8	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	100	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.3	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.6	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	95.3	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	93.9	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195735)								

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195735) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	83.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	89.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	78.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	74.3	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2436927**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Site	: POT129	Issue Date	: 22-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT129_241111	**11-Nov-2024**	**19-Nov-2024**	10-May-2025	✓	**20-Nov-2024**	10-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT129_241111	**11-Nov-2024**	**19-Nov-2024**	10-May-2025	✓	**20-Nov-2024**	10-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT129_241111	**11-Nov-2024**	**19-Nov-2024**	10-May-2025	✓	**20-Nov-2024**	10-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT129_241111	**11-Nov-2024**	**19-Nov-2024**	10-May-2025	✓	**20-Nov-2024**	10-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT129_241111	**11-Nov-2024**	**19-Nov-2024**	10-May-2025	✓	**20-Nov-2024**	10-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2436928**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 75345	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: POT113		
Sampler	: [redacted]		

Dates

Date Samples Received	: 15-Nov-2024 11:00	Issue Date	: 18-Nov-2024
Client Requested Due Date	: 22-Nov-2024	Scheduled Reporting Date	: **22-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 10.7'C DRW 1.7'C 2.7'C 2.7'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2436928-001	11-Nov-2024 16:31	0990_POT113_241111	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2436928**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75345	Issue Date	: 21-Nov-2024 14:57
Sampler	: [redacted]		
Site	: POT113		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_POT113_241111	----	----	----	----
			Sampling date / time	11-Nov-2024 16:31	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436928-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.06**	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.07**	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: GROUNDWATER (Matrix: WATER)			Sample ID	0990_POT113_241111	----	----	----	----
			Sampling date / time	11-Nov-2024 16:31	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2436928-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.13**	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.13**	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.13**	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**103**	----	----	----	----
13C8-PFOA	----	0.02	%	**108**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: GROUNDWATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2436928**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	[redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 18-Nov-2024
C-O-C number	: 75345	Issue Date	: 21-Nov-2024
Sampler	: [redacted]		
Site	: POT113		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6195735)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	84.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	102	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	87.3	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	92.9	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	95.4	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	84.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6195735)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	92.7	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	81.9	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	95.9	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	99.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	89.5	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	98.2	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	89.9	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	84.3	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	87.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	98.4	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	102	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6195735)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	97.4	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	91.8	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	100	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	91.3	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	90.6	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	95.3	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	93.9	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195735)								

Sub-Matrix: **WATER**				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6195735) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	83.1	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	89.6	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	78.8	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	74.3	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2436928**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Site	: POT113	Issue Date	: 21-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT113_241111	**11-Nov-2024**	**19-Nov-2024**	10-May-2025	✓	**20-Nov-2024**	10-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT113_241111	**11-Nov-2024**	**19-Nov-2024**	10-May-2025	✓	**20-Nov-2024**	10-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_POT113_241111	**11-Nov-2024**	**19-Nov-2024**	10-May-2025	✓	**20-Nov-2024**	10-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT113_241111	**11-Nov-2024**	**19-Nov-2024**	10-May-2025	✓	**20-Nov-2024**	10-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT113_241111	**11-Nov-2024**	**19-Nov-2024**	10-May-2025	✓	**20-Nov-2024**	10-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2437021**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 75362	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: PP QC'S NOVEMBER		
Sampler	: [redacted]		

Dates

Date Samples Received	: 15-Nov-2024 11:00	Issue Date	: 19-Nov-2024
Client Requested Due Date	: 26-Nov-2024	Scheduled Reporting Date	: **26-Nov-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 10.7'C DRW 1.7'C 2.7'C 2.7'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 7 / 4

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Sample 0990_QC200_241111 and 0990_QC201_241112 forwarded to ALS Brisbane for analysis.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	(On Hold) WATER No analysis requested	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2437021-001	11-Nov-2024 16:57	0990_QC100_241111		✓
ES2437021-002	12-Nov-2024 17:38	0990_QC101_241112		✓
ES2437021-005	11-Nov-2024 16:59	0990_QC300_241111		✓
ES2437021-006	12-Nov-2024 13:44	0990_QC301_2411		✓
ES2437021-007	11-Nov-2024 16:58	0990_QC400_241111	✓	
ES2437021-008	12-Nov-2024 13:45	0990_QC401_241112	✓	
ES2437021-009	11-Nov-2024 16:31	0990_QC500_241111	✓	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2437021**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024 11:00
Order number	: 60676801/	Date Analysis Commenced	: 19-Nov-2024
C-O-C number	: 75362	Issue Date	: 22-Nov-2024 21:02
Sampler	: [redacted]		
Site	: PP QC'S NOVEMBER		
Quote number	: ----		
No. of samples received	: 7		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC100_241111	0990_QC101_241112	0990_QC300_241111	0990_QC301_2411	----
			Sampling date / time	11-Nov-2024 16:57	12-Nov-2024 17:38	11-Nov-2024 16:59	12-Nov-2024 13:44	----
Compound	CAS Number	LOR	Unit	ES2437021-001	ES2437021-002	ES2437021-005	ES2437021-006	--------
				Result	Result	Result	Result	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC100_241111	0990_QC101_241112	0990_QC300_241111	0990_QC301_2411	----
			Sampling date / time	11-Nov-2024 16:57	12-Nov-2024 17:38	11-Nov-2024 16:59	12-Nov-2024 13:44	----
Compound	CAS Number	LOR	Unit	ES2437021-001	ES2437021-002	ES2437021-005	ES2437021-006	--------
				Result	Result	Result	Result	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**105**	**107**	**106**	**104**	----
13C8-PFOA	----	0.02	%	**97.0**	**105**	**104**	**104**	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2437021**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 19-Nov-2024
C-O-C number	: 75362	Issue Date	: 22-Nov-2024
Sampler	: [redacted]		
Site	: PP QC'S NOVEMBER		
Quote number	: ----		
No. of samples received	: 7		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6198666)									
ES2437156-078	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
ES2437156-080	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6198666)									
ES2437156-078	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6198666) - continued									
ES2437156-078	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2437156-080	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6198666)									
ES2437156-078	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437156-080	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6198666)									
ES2437156-078	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2437156-080	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6198666)									
ES2437156-078	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2437156-080	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6198666)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	76.6	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	75.7	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	76.5	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	82.8	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	88.1	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	86.9	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6198666)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	102	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	88.8	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	86.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	80.9	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	89.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	85.4	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	82.7	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	89.5	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	90.6	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	100	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6198666)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	89.1	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	102	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	105	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	87.3	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	93.7	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	97.5	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	88.6	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6198666)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6198666) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	87.7	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	86.5	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	99.7	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	88.7	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6198666)							
ES2437156-079	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	73.0	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	82.0	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	74.7	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	77.6	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	84.5	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	85.3	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6198666)							
ES2437156-079	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	110	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	84.2	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	92.8	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	80.6	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	91.8	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	92.5	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	84.7	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	87.0	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	108	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	81.2	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	99.9	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6198666)							
ES2437156-079	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	91.7	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	95.6	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	114	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	81.2	66.0	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6198666) - continued							
ES2437156-079	Anonymous	EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	104	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	94.9	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	82.8	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6198666)							
ES2437156-079	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	73.5	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	82.6	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	86.6	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	88.6	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2437021**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	[redacted]
Contact	[redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 15-Nov-2024
Site	: PP QC'S NOVEMBER	Issue Date	: 22-Nov-2024
Sampler	: [redacted]	No. of samples received	: 7
Order number	: 60676801/	No. of samples analysed	: 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X) 0990_QC100_241111,	0990_QC300_241111	**11-Nov-2024**	**20-Nov-2024**	10-May-2025	✓	**22-Nov-2024**	10-May-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC101_241112,	0990_QC301_2411	**12-Nov-2024**	**20-Nov-2024**	11-May-2025	✓	**22-Nov-2024**	11-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids								
HDPE (no PTFE) (EP231X) 0990_QC100_241111,	0990_QC300_241111	**11-Nov-2024**	**20-Nov-2024**	10-May-2025	✓	**22-Nov-2024**	10-May-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC101_241112,	0990_QC301_2411	**12-Nov-2024**	**20-Nov-2024**	11-May-2025	✓	**22-Nov-2024**	11-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X) 0990_QC100_241111,	0990_QC300_241111	**11-Nov-2024**	**20-Nov-2024**	10-May-2025	✓	**22-Nov-2024**	10-May-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC101_241112,	0990_QC301_2411	**12-Nov-2024**	**20-Nov-2024**	11-May-2025	✓	**22-Nov-2024**	11-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X) 0990_QC100_241111,	0990_QC300_241111	**11-Nov-2024**	**20-Nov-2024**	10-May-2025	✓	**22-Nov-2024**	10-May-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC101_241112,	0990_QC301_2411	**12-Nov-2024**	**20-Nov-2024**	11-May-2025	✓	**22-Nov-2024**	11-May-2025	✓
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X) 0990_QC100_241111,	0990_QC300_241111	**11-Nov-2024**	**20-Nov-2024**	10-May-2025	✓	**22-Nov-2024**	10-May-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC101_241112,	0990_QC301_2411	**12-Nov-2024**	**20-Nov-2024**	11-May-2025	✓	**22-Nov-2024**	11-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	Method	Matrix	Method Descriptions
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB2438417**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73719	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Biannual SW		
Sampler	: [redacted]		

Dates

Date Samples Received	: 07-Nov-2024 10:30	Issue Date	: 07-Nov-2024
Client Requested Due Date	: 14-Nov-2024	Scheduled Reporting Date	: **14-Nov-2024**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 12.2°C, 14.5°C, 21.6°C - Ice present
Receipt Detail	: ESKY LARGE	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Unless otherwise stated, analytical work for this work order will be conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818.
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
EB2438417-001	04-Nov-2024 11:12	0990_QC201_241101	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **EB2438417**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 07-Nov-2024 10:30
Order number	: 60676801/	Date Analysis Commenced	: 08-Nov-2024
C-O-C number	: 73719	Issue Date	: 14-Nov-2024 15:47
Sampler	: [redacted]		
Site	: Biannual SW		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC201_241101	----	----	----	----
			Sampling date / time	04-Nov-2024 11:12	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2438417-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC201_241101	----	----	----	----
			Sampling date / time	04-Nov-2024 11:12	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2438417-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**105**	----	----	----	----
13C8-PFOA	----	0.02	%	**108**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EB2438417**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	[redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 07-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 08-Nov-2024
C-O-C number	: 73719	Issue Date	: 14-Nov-2024
Sampler	: [redacted]		
Site	: Biannual SW		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6179772)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	74.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	77.0	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	70.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	78.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	72.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	75.3	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6179772)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	73.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	74.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	75.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	74.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	72.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	74.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	72.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	69.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	72.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	76.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	86.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6179772)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	67.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	68.8	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	64.3	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	68.5	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	64.9	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	70.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	78.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6179772)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6179772) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	65.3	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.2378 µg/L	71.1	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	82.3	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.241 µg/L	64.5	64.2	133

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2438417**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 07-Nov-2024
Site	: Biannual SW	Issue Date	: 14-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_QC201_241101	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_QC201_241101	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_QC201_241101	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_QC201_241101	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_QC201_241101	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2440543**
Amendment : **1**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/7.03.01	Quote number	: ES2019AECOMAU0030 (SY/139/19 V3)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Private Property		
Sampler	: [redacted]		

Dates

Date Samples Received	: 13-Dec-2024 10:30	Issue Date	: 08-Jan-2025
Client Requested Due Date	: 08-Jan-2025	Scheduled Reporting Date	: **08-Jan-2025**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 13.9'C 10.3'C 14.5'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 25 / 25

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- 17/12/2024 - This is an updated SRN which indicates the addition of PFAS analysis to samples 22 and 23 as well as the updated project title.
- 19/12/2024 - This is an updated SRN which indicates the new scheduled release date for this work order.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **QC Forward analysis will be conducted by NMI.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (31 analytes)	WATER - EP231X-LL PFAS - Full Suite (31 analytes) Low Level
ES2440543-001	09-Dec-2024 00:00	0990_POT128_241209		✓
ES2440543-002	09-Dec-2024 00:00	0990_POT113_241209	✓	
ES2440543-003	09-Dec-2024 00:00	0990_POT129_241209		✓
ES2440543-004	09-Dec-2024 00:00	0990_POT112_241209	✓	
ES2440543-005	09-Dec-2024 00:00	0990_OTH119_241209		✓
ES2440543-006	09-Dec-2024 00:00	0990_POT126_241209		✓
ES2440543-007	09-Dec-2024 00:00	0990_POT131_241209		✓
ES2440543-008	09-Dec-2024 00:00	0990_OTH117_241209		✓
ES2440543-009	09-Dec-2024 00:00	0990_POT125_241209		✓
ES2440543-010	11-Dec-2024 00:00	0990_POT130_241211		✓
ES2440543-011	11-Dec-2024 00:00	0990_POT121_241211	✓	
ES2440543-012	11-Dec-2024 00:00	0990_POT120_241211	✓	
ES2440543-013	11-Dec-2024 00:00	0990_POT198_241211		✓
ES2440543-014	11-Dec-2024 00:00	0990_POT201_241211	✓	
ES2440543-015	11-Dec-2024 00:00	0990_POT124_241211		✓
ES2440543-016	11-Dec-2024 00:00	0990_POT114_241211	✓	
ES2440543-017	11-Dec-2024 00:00	0990_POT127_241211		✓
ES2440543-018	11-Dec-2024 00:00	0990_OTH118_241211		✓
ES2440543-019	09-Dec-2024 00:00	0990_QC100_241209	✓	
ES2440543-020	11-Dec-2024 00:00	0990_QC101_241211	✓	
ES2440543-021	09-Dec-2024 00:00	0990_QC300_241209	✓	
ES2440543-022	09-Dec-2024 00:00	0990_QC400_241209	✓	
ES2440543-023	09-Dec-2024 00:00	0990_QC500_241209	✓	
ES2440543-024	11-Dec-2024 00:00	0990_QC301_241211	✓	
ES2440543-025	11-Dec-2024 00:00	0990_QC401_241211	✓	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2440543**	Page	: 1 of 19
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 13-Dec-2024 10:30
Order number	: 60676801/7.03.01	Date Analysis Commenced	: 16-Dec-2024
C-O-C number	: ----	Issue Date	: 23-Dec-2024 14:49
Sampler	: [redacted]		
Site	: Private Property		
Quote number	: SY/139/19 V3		
No. of samples received	: 25		
No. of samples analysed	: 25		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT128_241209	0990_POT113_241209	0990_POT129_241209	0990_POT112_241209	0990_OTH119_241209
			Sampling date / time	09-Dec-2024 00:00	09-Dec-2024 00:00	09-Dec-2024 00:00	09-Dec-2024 00:00	09-Dec-2024 00:00
Compound	CAS Number	LOR	Unit	ES2440543-001	ES2440543-002	ES2440543-003	ES2440543-004	ES2440543-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	----	**0.002**	----	**0.004**
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	<0.02	----	<0.02	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	----	<0.002	----	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	**0.007**	----	**0.009**	----	<0.002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	<0.02	----	<0.02	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	----	<0.002	----	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	----	**0.04**	----	**0.04**	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	<0.02	----	<0.02	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	**0.008**	----	**0.011**	----	**0.006**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	**0.05**	----	**0.06**	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	----	<0.002	----	<0.002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	<0.02	----	<0.02	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	----	<0.01	----	<0.01
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	<0.1	----	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	----	<0.002	----	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	<0.02	----	<0.02	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	----	<0.002	----	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	<0.02	----	<0.02	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	----	<0.002	----	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	<0.02	----	<0.02	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT128_241209	0990_POT113_241209	0990_POT129_241209	0990_POT112_241209	0990_OTH119_241209
			Sampling date / time	09-Dec-2024 00:00	09-Dec-2024 00:00	09-Dec-2024 00:00	09-Dec-2024 00:00	09-Dec-2024 00:00
Compound	CAS Number	LOR	Unit	ES2440543-001	ES2440543-002	ES2440543-003	ES2440543-004	ES2440543-005
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	----	<0.002	----	**0.002**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	<0.01	----	<0.01	----
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	----	<0.002	----	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	<0.02	----	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	----	<0.002	----	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	<0.02	----	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	----	<0.002	----	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	<0.02	----	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	----	<0.002	----	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	<0.02	----	<0.02	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	----	<0.002	----	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	<0.02	----	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	----	<0.005	----	<0.005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	<0.05	----	<0.05	----
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	----	<0.005	----	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	----	<0.002	----	<0.002
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	<0.02	----	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	----	<0.005	----	<0.005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	<0.05	----	<0.05	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT128_241209	0990_POT113_241209	0990_POT129_241209	0990_POT112_241209	0990_OTH119_241209
			Sampling date / time	09-Dec-2024 00:00	09-Dec-2024 00:00	09-Dec-2024 00:00	09-Dec-2024 00:00	09-Dec-2024 00:00
Compound	CAS Number	LOR	Unit	ES2440543-001	ES2440543-002	ES2440543-003	ES2440543-004	ES2440543-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	----	<0.005	----	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	<0.05	----	<0.05	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	----	<0.005	----	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	----	<0.05	----	<0.05	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	----	<0.005	----	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	<0.05	----	<0.05	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	----	<0.002	----	<0.002
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	<0.02	----	<0.02	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	----	<0.002	----	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	<0.02	----	<0.02	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	----	<0.005	----	<0.005
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	<0.05	----	<0.05	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	----	**0.022**	----	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	<0.05	----	<0.05	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	----	<0.005	----	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT128_241209	0990_POT113_241209	0990_POT129_241209	0990_POT112_241209	0990_OTH119_241209
			Sampling date / time	09-Dec-2024 00:00	09-Dec-2024 00:00	09-Dec-2024 00:00	09-Dec-2024 00:00	09-Dec-2024 00:00
Compound	CAS Number	LOR	Unit	ES2440543-001	ES2440543-002	ES2440543-003	ES2440543-004	ES2440543-005
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	<0.05	----	<0.05	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	----	<0.005	----	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	<0.05	----	<0.05	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	**0.015**	----	**0.044**	----	**0.012**
Sum of PFAS	----	0.01	µg/L	----	**0.09**	----	**0.10**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	**0.015**	----	**0.020**	----	**0.006**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	**0.09**	----	**0.10**	----
Sum of PFAS (WA DER List)	----	0.002	µg/L	**0.015**	----	**0.044**	----	**0.012**
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	**0.09**	----	**0.10**	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**97.9**	----	**102**	----	**101**
13C4-PFOS	----	0.02	%	----	**105**	----	**112**	----
13C8-PFOA	----	0.002	%	**100**	----	**96.1**	----	**95.8**
13C8-PFOA	----	0.02	%	----	**106**	----	**111**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT126_241209	0990_POT131_241209	0990_OTH117_241209	0990_POT125_241209	0990_POT130_241211
			Sampling date / time	09-Dec-2024 00:00	09-Dec-2024 00:00	09-Dec-2024 00:00	09-Dec-2024 00:00	11-Dec-2024 00:00
Compound	CAS Number	LOR	Unit	ES2440543-006	ES2440543-007	ES2440543-008	ES2440543-009	ES2440543-010
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	<0.002	**0.009**	<0.002	<0.002
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	<0.002	**0.016**	<0.002	<0.002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT126_241209	0990_POT131_241209	0990_OTH117_241209	0990_POT125_241209	0990_POT130_241211
			Sampling date / time	09-Dec-2024 00:00	09-Dec-2024 00:00	09-Dec-2024 00:00	09-Dec-2024 00:00	11-Dec-2024 00:00
Compound	CAS Number	LOR	Unit	ES2440543-006	ES2440543-007	ES2440543-008	ES2440543-009	ES2440543-010
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	<0.002
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	<0.005	**0.013**	**0.040**
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	<0.002	<0.002	**0.025**	**0.013**	**0.040**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	<0.002	<0.002	**0.025**	<0.002	<0.002
Sum of PFAS (WA DER List)	----	0.002	µg/L	<0.002	<0.002	**0.025**	**0.013**	**0.040**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**101**	**101**	**104**	**106**	**101**
13C8-PFOA	----	0.002	%	**102**	**101**	**100**	**100**	**92.6**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT121_241211	0990_POT120_241211	0990_POT198_241211	0990_POT201_241211	0990_POT124_241211
			Sampling date / time	11-Dec-2024 00:00	11-Dec-2024 00:00	11-Dec-2024 00:00	11-Dec-2024 00:00	11-Dec-2024 00:00
Compound	CAS Number	LOR	Unit	ES2440543-011	ES2440543-012	ES2440543-013	ES2440543-014	ES2440543-015
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	----	----	<0.002	----	<0.002
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	----	<0.02	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	----	----	<0.002	----	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	----	----	<0.002	----	**0.014**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	----	<0.02	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	----	----	<0.002	----	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.02**	**0.02**	----	<0.01	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	----	<0.02	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	----	----	<0.002	----	**0.021**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.02**	**0.03**	----	<0.01	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	----	----	<0.002	----	<0.002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	----	<0.02	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	----	----	<0.01	----	<0.01
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	----	----	<0.002	----	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	----	<0.02	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	----	----	<0.002	----	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	----	<0.02	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	----	----	<0.002	----	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	<0.02	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT121_241211	0990_POT120_241211	0990_POT198_241211	0990_POT201_241211	0990_POT124_241211
			Sampling date / time	11-Dec-2024 00:00	11-Dec-2024 00:00	11-Dec-2024 00:00	11-Dec-2024 00:00	11-Dec-2024 00:00
Compound	CAS Number	LOR	Unit	ES2440543-011	ES2440543-012	ES2440543-013	ES2440543-014	ES2440543-015
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	----	----	<0.002	----	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	----	<0.01	----
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	----	----	<0.002	----	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	----	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	----	----	<0.002	----	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	----	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	----	----	<0.002	----	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	----	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	----	----	<0.002	----	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	----	<0.02	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	----	----	<0.002	----	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	----	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	----	----	<0.005	----	<0.005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	----	<0.05	----
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	----	----	<0.005	----	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	----	----	<0.002	----	<0.002
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	----	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	----	----	<0.005	----	<0.005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	----	<0.05	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT121_241211	0990_POT120_241211	0990_POT198_241211	0990_POT201_241211	0990_POT124_241211
			Sampling date / time	11-Dec-2024 00:00	11-Dec-2024 00:00	11-Dec-2024 00:00	11-Dec-2024 00:00	11-Dec-2024 00:00
Compound	CAS Number	LOR	Unit	ES2440543-011	ES2440543-012	ES2440543-013	ES2440543-014	ES2440543-015
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	----	----	<0.005	----	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	----	<0.05	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	----	----	<0.005	----	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	----	<0.05	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	----	----	<0.005	----	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	----	<0.05	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	----	----	<0.002	----	<0.002
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	----	<0.02	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	----	----	<0.002	----	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	----	<0.02	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	----	----	<0.005	----	<0.005
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	<0.05	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	----	----	<0.005	----	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	<0.05	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	----	----	<0.005	----	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT121_241211	0990_POT120_241211	0990_POT198_241211	0990_POT201_241211	0990_POT124_241211
			Sampling date / time	11-Dec-2024 00:00	11-Dec-2024 00:00	11-Dec-2024 00:00	11-Dec-2024 00:00	11-Dec-2024 00:00
Compound	CAS Number	LOR	Unit	ES2440543-011	ES2440543-012	ES2440543-013	ES2440543-014	ES2440543-015
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	<0.05	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	----	----	<0.005	----	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	<0.05	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	----	----	<0.002	----	**0.035**
Sum of PFAS	----	0.01	µg/L	**0.04**	**0.05**	----	<0.01	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	----	----	<0.002	----	**0.035**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.04**	**0.05**	----	<0.01	----
Sum of PFAS (WA DER List)	----	0.002	µg/L	----	----	<0.002	----	**0.035**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.04**	**0.05**	----	<0.01	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	----	----	**105**	----	**103**
13C4-PFOS	----	0.02	%	**109**	**105**	----	**110**	----
13C8-PFOA	----	0.002	%	----	----	**102**	----	**102**
13C8-PFOA	----	0.02	%	**104**	**107**	----	**102**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT114_241211	0990_POT127_241211	0990_OTH118_241211	0990_QC100_241209	0990_QC101_241211
			Sampling date / time	11-Dec-2024 00:00	11-Dec-2024 00:00	11-Dec-2024 00:00	09-Dec-2024 00:00	11-Dec-2024 00:00
Compound	CAS Number	LOR	Unit	ES2440543-016	ES2440543-017	ES2440543-018	ES2440543-019	ES2440543-020
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	----	<0.002	<0.002	----	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	----	<0.002	<0.002	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	----	<0.002	<0.002	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	----	<0.002	<0.002	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	----	<0.002	<0.002	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	----	<0.002	<0.002	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	----	<0.01	<0.01	----	----
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	----	<0.002	<0.002	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	----	<0.002	<0.002	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	----	<0.002	<0.002	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	<0.02	<0.02

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT114_241211	0990_POT127_241211	0990_OTH118_241211	0990_QC100_241209	0990_QC101_241211
			Sampling date / time	11-Dec-2024 00:00	11-Dec-2024 00:00	11-Dec-2024 00:00	09-Dec-2024 00:00	11-Dec-2024 00:00
Compound	CAS Number	LOR	Unit	ES2440543-016	ES2440543-017	ES2440543-018	ES2440543-019	ES2440543-020
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	----	<0.002	<0.002	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	----	<0.002	<0.002	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	----	<0.002	<0.002	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	----	<0.002	<0.002	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	----	<0.002	<0.002	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	----	<0.002	<0.002	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	----	<0.005	<0.005	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	<0.05	<0.05
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	----	<0.005	<0.005	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	----	<0.002	<0.002	----	----
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	----	<0.005	<0.005	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT114_241211	0990_POT127_241211	0990_OTH118_241211	0990_QC100_241209	0990_QC101_241211
			Sampling date / time	11-Dec-2024 00:00	11-Dec-2024 00:00	11-Dec-2024 00:00	09-Dec-2024 00:00	11-Dec-2024 00:00
Compound	CAS Number	LOR	Unit	ES2440543-016	ES2440543-017	ES2440543-018	ES2440543-019	ES2440543-020
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	----	<0.005	<0.005	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	----	<0.005	<0.005	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	----	<0.005	<0.005	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	----	<0.002	<0.002	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	----	<0.002	<0.002	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	----	<0.005	<0.005	----	----
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	----	<0.005	<0.005	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	----	<0.005	<0.005	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT114_241211	0990_POT127_241211	0990_OTH118_241211	0990_QC100_241209	0990_QC101_241211
			Sampling date / time	11-Dec-2024 00:00	11-Dec-2024 00:00	11-Dec-2024 00:00	09-Dec-2024 00:00	11-Dec-2024 00:00
Compound	CAS Number	LOR	Unit	ES2440543-016	ES2440543-017	ES2440543-018	ES2440543-019	ES2440543-020
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	----	<0.005	<0.005	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	----	<0.002	<0.002	----	----
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	----	<0.002	<0.002	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.002	µg/L	----	<0.002	<0.002	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	----	106	109	----	----
13C4-PFOS	----	0.02	%	102	----	----	106	107
13C8-PFOA	----	0.002	%	----	104	105	----	----
13C8-PFOA	----	0.02	%	108	----	----	107	108

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC300_241209	0990_QC400_241209	0990_QC500_241209	0990_QC301_241211	0990_QC401_241211
			Sampling date / time	09-Dec-2024 00:00	09-Dec-2024 00:00	09-Dec-2024 00:00	11-Dec-2024 00:00	11-Dec-2024 00:00
Compound	CAS Number	LOR	Unit	ES2440543-021	ES2440543-022	ES2440543-023	ES2440543-024	ES2440543-025
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC300_241209	0990_QC400_241209	0990_QC500_241209	0990_QC301_241211	0990_QC401_241211
			Sampling date / time	09-Dec-2024 00:00	09-Dec-2024 00:00	09-Dec-2024 00:00	11-Dec-2024 00:00	11-Dec-2024 00:00
Compound	CAS Number	LOR	Unit	ES2440543-021	ES2440543-022	ES2440543-023	ES2440543-024	ES2440543-025
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**110**	**104**	**108**	**102**	**99.5**
13C8-PFOA	----	0.02	%	**108**	**104**	**109**	**111**	**106**

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2440543**	Page	: 1 of 9
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 13-Dec-2024
Order number	: 60676801/7.03.01	Date Analysis Commenced	: 16-Dec-2024
C-O-C number	: ----	Issue Date	: 23-Dec-2024
Sampler	: [redacted]		
Site	: Private Property		
Quote number	: SY/139/19 V3		
No. of samples received	: 25		
No. of samples analysed	: 25		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6273755)									
ES2441161-001	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	0.008	0.007	16.3	No Limit
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	0.004	0.005	0.0	No Limit
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	0.032	0.030	4.9	0% - 50%
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	0.003	0.003	0.0	No Limit
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	0.047	0.041	13.5	0% - 20%
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	0.0	No Limit
ES2441161-003	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	0.005	0.005	0.0	No Limit
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	0.014	0.012	11.5	No Limit
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6273755)									
ES2441161-001	Anonymous	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	0.004	0.003	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6273755) - continued									
ES2441161-001	Anonymous	EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	0.012	0.008	44.0	No Limit
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	0.004	0.004	0.0	No Limit
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
ES2441161-003	Anonymous	EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	0.006	0.007	0.0	No Limit
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	0.006	0.006	0.0	No Limit
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	0.003	0.004	0.0	No Limit
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6273755)									
ES2441161-001	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6273755) - continued									
ES2441161-001	Anonymous	EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
ES2441161-003	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6273755)									
ES2441161-001	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.0	No Limit
ES2441161-003	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	0.0	No Limit
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6266332)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	92.0	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	111	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	88.5	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	125	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	109	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	86.7	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6266347)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	96.7	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	108	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	95.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	123	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	94.0	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6273755)								
EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	0.025 µg/L	92.1	72.0	130
EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	0.025 µg/L	105	71.0	127
EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	0.025 µg/L	93.9	68.0	131
EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	0.025 µg/L	120	69.0	134
EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	0.025 µg/L	104	65.0	140
EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	0.025 µg/L	79.2	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6266332)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	100	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	99.1	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	97.1	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	102	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	100	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	95.2	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	100	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	102	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	134

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6266332) - continued								
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	94.3	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	105	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6266347)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	96.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	98.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	102	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	102	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	95.5	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	88.7	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	97.6	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6273755)								
EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	0.125 µg/L	91.3	73.0	129
EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.025 µg/L	97.1	72.0	129
EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	0.025 µg/L	90.0	72.0	129
EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	0.025 µg/L	97.3	72.0	130
EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	0.025 µg/L	103	71.0	133
EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	0.025 µg/L	100	69.0	130
EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	0.025 µg/L	106	71.0	129
EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	0.025 µg/L	106	69.0	133
EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	0.025 µg/L	113	72.0	134
EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	0.025 µg/L	83.9	65.0	144
EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	0.0625 µg/L	128	71.0	132
EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	0.025 µg/L	111	65.6	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6266332)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	102	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	102	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	107	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	94.9	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	100	57.6	145

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6266332) - continued								
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	108	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	100.0	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6266347)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	107	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	96.4	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	109	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	93.0	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	108	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	104	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	101	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6273755)								
EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	0.025 µg/L	94.0	67.0	137
EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	0.0625 µg/L	86.4	68.0	141
EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	0.0625 µg/L	79.7	61.1	139
EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	0.0625 µg/L	98.1	72.3	128
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	0.0625 µg/L	105	63.2	134
EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	0.025 µg/L	106	65.0	136
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	0.025 µg/L	92.9	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6266332)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	82.9	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	87.2	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	109	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	80.7	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6266347)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	86.4	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	93.7	64.0	140

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6266347) - continued								
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	90.0	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	92.8	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6273755)								
EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	0.025 µg/L	101	63.0	143
EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	0.025 µg/L	112	64.0	140
EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	0.025 µg/L	116	67.0	138
EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	0.025 µg/L	93.3	75.2	137

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6273755)							
ES2441161-002	Anonymous	EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.025 µg/L	# Not Determined	72.0	130
		EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.025 µg/L	# Not Determined	71.0	127
		EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.025 µg/L	# Not Determined	68.0	131
		EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.025 µg/L	113	69.0	134
		EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.025 µg/L	# Not Determined	65.0	140
		EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.025 µg/L	84.2	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6273755)							
ES2441161-002	Anonymous	EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.125 µg/L	77.9	73.0	129
		EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.025 µg/L	# Not Determined	72.0	129
		EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.025 µg/L	# Not Determined	72.0	129
		EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.025 µg/L	97.3	72.0	130
		EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.025 µg/L	96.2	71.0	133
		EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.025 µg/L	94.8	69.0	130
		EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.025 µg/L	103	71.0	129
		EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.025 µg/L	100	69.0	133
		EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.025 µg/L	124	72.0	134

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6273755) - continued							
ES2441161-002	Anonymous	EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.025 µg/L	84.4	65.0	144
		EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.0625 µg/L	116	71.0	132
		EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.025 µg/L	118	65.6	133
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6273755)							
ES2441161-002	Anonymous	EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.025 µg/L	78.1	67.0	137
		EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.0625 µg/L	72.6	68.0	141
		EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.0625 µg/L	74.5	61.1	139
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.0625 µg/L	86.0	72.3	128
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.0625 µg/L	98.4	63.2	134
		EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.025 µg/L	121	65.0	136
		EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.025 µg/L	114	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6273755)							
ES2441161-002	Anonymous	EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.025 µg/L	77.1	63.0	143
		EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.025 µg/L	104	64.0	140
		EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.025 µg/L	117	67.0	138
		EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.025 µg/L	82.1	75.2	137

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2440543**	Page	: 1 of 7
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 13-Dec-2024
Site	: Private Property	Issue Date	: 23-Dec-2024
Sampler	: [redacted]	No. of samples received	: 25
Order number	: 60676801/7.03.01	No. of samples analysed	: 25

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP231A: Perfluoroalkyl Sulfonic Acids	ES2441161--002	Anonymous	**Perfluorobutane sulfonic acid (PFBS)**	375-73-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	ES2441161--002	Anonymous	**Perfluoropentane sulfonic acid (PFPeS)**	2706-91-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	ES2441161--002	Anonymous	**Perfluorohexane sulfonic acid (PFHxS)**	355-46-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231A: Perfluoroalkyl Sulfonic Acids	ES2441161--002	Anonymous	**Perfluorooctane sulfonic acid (PFOS)**	1763-23-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	ES2441161--002	Anonymous	**Perfluoropentanoic acid (PFPeA)**	2706-90-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP231B: Perfluoroalkyl Carboxylic Acids	ES2441161--002	Anonymous	**Perfluorohexanoic acid (PFHxA)**	307-24-4	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	25	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	25	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method	***Sample Date***	*Extraction / Preparation*			*Analysis*		
Container / *Client Sample ID(s)*		***Date extracted***	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_POT113_241209, 0990_POT112_241209, 0990_QC100_241209, 0990_QC300_241209, 0990_QC400_241209, 0990_QC500_241209	**09-Dec-2024**	**18-Dec-2024**	07-Jun-2025	✓	**20-Dec-2024**	07-Jun-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT128_241209, 0990_POT129_241209, 0990_OTH119_241209, 0990_POT126_241209, 0990_POT131_241209, 0990_OTH117_241209, 0990_POT125_241209	**09-Dec-2024**	**20-Dec-2024**	07-Jun-2025	✓	**23-Dec-2024**	07-Jun-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT121_241211, 0990_POT120_241211, 0990_POT201_241211, 0990_POT114_241211, 0990_QC101_241211, 0990_QC301_241211, 0990_QC401_241211	**11-Dec-2024**	**18-Dec-2024**	09-Jun-2025	✓	**20-Dec-2024**	09-Jun-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT130_241211, 0990_POT198_241211, 0990_POT124_241211, 0990_POT127_241211, 0990_OTH118_241211	**11-Dec-2024**	**20-Dec-2024**	09-Jun-2025	✓	**23-Dec-2024**	09-Jun-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_POT113_241209, 0990_POT112_241209, 0990_QC100_241209, 0990_QC300_241209, 0990_QC400_241209, 0990_QC500_241209	**09-Dec-2024**	**18-Dec-2024**	07-Jun-2025	✓	**20-Dec-2024**	07-Jun-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT128_241209, 0990_POT129_241209, 0990_OTH119_241209, 0990_POT126_241209, 0990_POT131_241209, 0990_OTH117_241209, 0990_POT125_241209	**09-Dec-2024**	**20-Dec-2024**	07-Jun-2025	✓	**23-Dec-2024**	07-Jun-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT121_241211, 0990_POT120_241211, 0990_POT201_241211, 0990_POT114_241211, 0990_QC101_241211, 0990_QC301_241211, 0990_QC401_241211	**11-Dec-2024**	**18-Dec-2024**	09-Jun-2025	✓	**20-Dec-2024**	09-Jun-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT130_241211, 0990_POT198_241211, 0990_POT124_241211, 0990_POT127_241211, 0990_OTH118_241211	**11-Dec-2024**	**20-Dec-2024**	09-Jun-2025	✓	**23-Dec-2024**	09-Jun-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X) 0990_POT113_241209, 0990_QC100_241209, 0990_QC400_241209,	0990_POT112_241209, 0990_QC300_241209, 0990_QC500_241209	**09-Dec-2024**	**18-Dec-2024**	07-Jun-2025	✓	**20-Dec-2024**	07-Jun-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT128_241209, 0990_OTH119_241209, 0990_POT131_241209, 0990_POT125_241209	0990_POT129_241209, 0990_POT126_241209, 0990_OTH117_241209,	**09-Dec-2024**	**20-Dec-2024**	07-Jun-2025	✓	**23-Dec-2024**	07-Jun-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT121_241211, 0990_POT201_241211, 0990_QC101_241211, 0990_QC401_241211	0990_POT120_241211, 0990_POT114_241211, 0990_QC301_241211,	**11-Dec-2024**	**18-Dec-2024**	09-Jun-2025	✓	**20-Dec-2024**	09-Jun-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT130_241211, 0990_POT124_241211, 0990_OTH118_241211	0990_POT198_241211, 0990_POT127_241211,	**11-Dec-2024**	**20-Dec-2024**	09-Jun-2025	✓	**23-Dec-2024**	09-Jun-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X) 0990_POT113_241209, 0990_QC100_241209, 0990_QC400_241209,	0990_POT112_241209, 0990_QC300_241209, 0990_QC500_241209	**09-Dec-2024**	**18-Dec-2024**	07-Jun-2025	✓	**20-Dec-2024**	07-Jun-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT128_241209, 0990_OTH119_241209, 0990_POT131_241209, 0990_POT125_241209	0990_POT129_241209, 0990_POT126_241209, 0990_OTH117_241209,	**09-Dec-2024**	**20-Dec-2024**	07-Jun-2025	✓	**23-Dec-2024**	07-Jun-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT121_241211, 0990_POT201_241211, 0990_QC101_241211, 0990_QC401_241211	0990_POT120_241211, 0990_POT114_241211, 0990_QC301_241211,	**11-Dec-2024**	**18-Dec-2024**	09-Jun-2025	✓	**20-Dec-2024**	09-Jun-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT130_241211, 0990_POT124_241211, 0990_OTH118_241211	0990_POT198_241211, 0990_POT127_241211,	**11-Dec-2024**	**20-Dec-2024**	09-Jun-2025	✓	**23-Dec-2024**	09-Jun-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_POT113_241209, 0990_POT112_241209, 0990_QC100_241209, 0990_QC300_241209, 0990_QC400_241209, 0990_QC500_241209	**09-Dec-2024**	**18-Dec-2024**	07-Jun-2025	✓	**20-Dec-2024**	07-Jun-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT128_241209, 0990_POT129_241209, 0990_OTH119_241209, 0990_POT126_241209, 0990_POT131_241209, 0990_OTH117_241209, 0990_POT125_241209	**09-Dec-2024**	**20-Dec-2024**	07-Jun-2025	✓	**23-Dec-2024**	07-Jun-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT121_241211, 0990_POT120_241211, 0990_POT201_241211, 0990_POT114_241211, 0990_QC101_241211, 0990_QC301_241211, 0990_QC401_241211	**11-Dec-2024**	**18-Dec-2024**	09-Jun-2025	✓	**20-Dec-2024**	09-Jun-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT130_241211, 0990_POT198_241211, 0990_POT124_241211, 0990_POT127_241211, 0990_OTH118_241211	**11-Dec-2024**	**20-Dec-2024**	09-Jun-2025	✓	**23-Dec-2024**	09-Jun-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	25	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	25	**8.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	25	**8.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	25	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is concentrated, combined with an equal volume of reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2501556**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_25	Page	: 1 of 4
Order number	: 60676801 / 7.03.01	Quote number	: ES2019AECOMAU0030 (SY/139/19 V3)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [redacted]		

Dates

Date Samples Received	: 22-Jan-2025 11:30	Issue Date	: 23-Jan-2025
Client Requested Due Date	: 29-Jan-2025	Scheduled Reporting Date	: **29-Jan-2025**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 18.8'C 22.8'C 19.2'C
Receipt Detail	:	No. of samples received / analysed	: 36 / 36

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- 23/01/2025 - This is an updated SRN which indicates the corrected project ID for this workorder.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (31 analytes)	WATER - EP231X-LL PFAS - Full Suite (31 analytes) Low Level
ES2501556-001	13-Jan-2025 00:00	0990_POT112_250113	✓	
ES2501556-002	13-Jan-2025 00:00	0990_POT128_250113		✓
ES2501556-003	13-Jan-2025 00:00	0990_POT113_250113	✓	
ES2501556-004	13-Jan-2025 00:00	0990_POT129_250113		✓
ES2501556-005	13-Jan-2025 00:00	0990_POT119_250113		✓
ES2501556-006	13-Jan-2025 00:00	0990_POT126_250113		✓
ES2501556-007	13-Jan-2025 00:00	0990_OTH117_250113		✓
ES2501556-008	13-Jan-2025 00:00	0990_POT125_250113		✓
ES2501556-009	13-Jan-2025 00:00	0990_POT130_250113		✓
ES2501556-010	13-Jan-2025 00:00	0990_POT121_250113	✓	
ES2501556-011	14-Jan-2025 00:00	0990_POT120_250113	✓	
ES2501556-012	14-Jan-2025 00:00	0990_POT198_250113		✓
ES2501556-013	14-Jan-2025 00:00	0990_POT201_250113		✓
ES2501556-014	14-Jan-2025 00:00	0990_POT124_250113		✓
ES2501556-015	14-Jan-2025 00:00	0990_POT114_250113	✓	
ES2501556-016	14-Jan-2025 00:00	0990_POT127_250113		✓
ES2501556-017	14-Jan-2025 00:00	0990_OTH118_250113		✓
ES2501556-018	14-Jan-2025 00:00	0990_QC100_250113	✓	
ES2501556-019	14-Jan-2025 00:00	0990_QC300_250113	✓	
ES2501556-020	15-Jan-2025 00:00	0990_MW808_250113	✓	
ES2501556-021	15-Jan-2025 00:00	0990_MW809_250113	✓	
ES2501556-022	15-Jan-2025 00:00	0990_MW810_250113	✓	
ES2501556-023	15-Jan-2025 00:00	0990_MW811_250113	✓	
ES2501556-024	15-Jan-2025 00:00	0990_MW812_250113	✓	
ES2501556-025	15-Jan-2025 00:00	0990_MW813_250113	✓	
ES2501556-026	15-Jan-2025 00:00	0990_QC302_250113	✓	
ES2501556-027	15-Jan-2025 00:00	0990_QC402_250113	✓	
ES2501556-028	16-Jan-2025 00:00	0990_POT131_250113		✓
ES2501556-029	13-Jan-2025 00:00	0990_QC400_250113	✓	
ES2501556-030	13-Jan-2025 00:00	0990_QC500_250113	✓	
ES2501556-031	14-Jan-2025 00:00	0990_QC101_250113	✓	
ES2501556-032	14-Jan-2025 00:00	0990_QC102_250113	✓	
ES2501556-033	14-Jan-2025 00:00	0990_QC301_250113	✓	
ES2501556-034	14-Jan-2025 00:00	0990_QC401_250113	✓	
ES2501556-035	13-Jan-2025 00:00	0990_SW153_250113	✓	

			WATER - EP231X PFAS - Full Suite (31 analytes)	WATER - EP231X-LL PFAS - Full Suite (31 analytes) Low Level
ES2501556-036	13-Jan-2025 00:00	0990_SW108_250113	✓	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2501556**	Page	: 1 of 27
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 22-Jan-2025 11:30
Order number	: 60676801 / 7.03.01	Date Analysis Commenced	: 24-Jan-2025
C-O-C number	: ----	Issue Date	: 30-Jan-2025 13:40
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3		
No. of samples received	: 36		
No. of samples analysed	: 33		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_250113	0990_POT128_250113	0990_POT113_250113	0990_POT129_250113	0990_POT119_250113
			Sampling date / time	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-001	ES2501556-002	ES2501556-003	ES2501556-004	ES2501556-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	----	**0.003**	----	**0.004**	**0.005**
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	----	<0.002	----	**0.003**	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	----	**0.016**	----	**0.023**	**0.006**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	----	<0.002	----	**0.003**	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.02**	----	**0.10**	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	----	**0.028**	----	**0.038**	**0.015**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.03**	----	**0.08**	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	<0.02	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	----	<0.01	----	<0.01	<0.01
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	<0.1	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	----	**0.004**	----	**0.006**	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	<0.02	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_250113	0990_POT128_250113	0990_POT113_250113	0990_POT129_250113	0990_POT119_250113
			Sampling date / time	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-001	ES2501556-002	ES2501556-003	ES2501556-004	ES2501556-005
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	----	<0.002	----	<0.002	**0.005**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	<0.01	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	----	<0.005	----	<0.005	<0.005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	<0.05	----	----
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	----	<0.005	----	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	<0.02	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	----	<0.005	----	<0.005	<0.005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	<0.05	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_250113	0990_POT128_250113	0990_POT113_250113	0990_POT129_250113	0990_POT119_250113
			Sampling date / time	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-001	ES2501556-002	ES2501556-003	ES2501556-004	ES2501556-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	----	<0.005	----	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	----	<0.005	----	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	<0.05	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	----	<0.005	----	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	----	<0.002	----	<0.002	<0.002
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	<0.02	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	----	<0.002	----	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	<0.02	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	----	<0.005	----	<0.005	<0.005
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	<0.05	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	----	<0.005	----	<0.005	**0.016**
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	**0.07**	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	----	<0.005	----	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_250113	0990_POT128_250113	0990_POT113_250113	0990_POT129_250113	0990_POT119_250113
			Sampling date / time	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-001	ES2501556-002	ES2501556-003	ES2501556-004	ES2501556-005
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	<0.05	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	----	<0.005	----	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	<0.05	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	----	**0.051**	----	**0.077**	**0.047**
Sum of PFAS	----	0.01	µg/L	**0.05**	----	**0.25**	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	----	**0.044**	----	**0.061**	**0.021**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.05**	----	**0.18**	----	----
Sum of PFAS (WA DER List)	----	0.002	µg/L	----	**0.051**	----	**0.071**	**0.047**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.05**	----	**0.25**	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	----	**101**	----	**105**	**97.0**
13C4-PFOS	----	0.02	%	**91.6**	----	**92.1**	----	----
13C8-PFOA	----	0.002	%	----	**102**	----	**101**	**99.9**
13C8-PFOA	----	0.02	%	**99.5**	----	**99.4**	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT126_250113	0990_OTH117_250113	0990_POT125_250113	0990_POT130_250113	0990_POT121_250113
			Sampling date / time	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-006	ES2501556-007	ES2501556-008	ES2501556-009	ES2501556-010
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	----	----	----	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	**0.010**	**0.003**	**0.004**	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	----	----	----	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	----	----	----	----	**0.02**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	----	----	----	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	**0.003**	**0.016**	**0.003**	<0.002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	----	----	----	**0.02**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	----	----	----	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	----	----	----	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	----	----	----	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	**0.004**	<0.002	<0.002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	----	----	----	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	----	----	----	<0.02

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT126_250113	0990_OTH117_250113	0990_POT125_250113	0990_POT130_250113	0990_POT121_250113
			Sampling date / time	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-006	ES2501556-007	ES2501556-008	ES2501556-009	ES2501556-010
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	----	----	----	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	----	----	----	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	----	----	----	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	----	----	----	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	----	----	----	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	----	----	----	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	----	----	----	<0.05
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	----	----	----	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	----	----	----	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT126_250113	0990_OTH117_250113	0990_POT125_250113	0990_POT130_250113	0990_POT121_250113
			Sampling date / time	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-006	ES2501556-007	ES2501556-008	ES2501556-009	ES2501556-010
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	----	----	----	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	----	----	----	----	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	----	----	----	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	----	----	----	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	----	----	----	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	----	----	----	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	**0.016**	<0.005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	----	----	----	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT126_250113	0990_OTH117_250113	0990_POT125_250113	0990_POT130_250113	0990_POT121_250113
			Sampling date / time	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-006	ES2501556-007	ES2501556-008	ES2501556-009	ES2501556-010
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	----	----	----	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	----	----	----	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	**0.003**	**0.030**	**0.022**	**0.004**	----
Sum of PFAS	----	0.01	µg/L	----	----	----	----	**0.04**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	**0.003**	**0.026**	**0.006**	**0.004**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	----	----	----	**0.04**
Sum of PFAS (WA DER List)	----	0.002	µg/L	**0.003**	**0.030**	**0.022**	**0.004**	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	----	----	----	**0.04**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**98.2**	**103**	**104**	**102**	----
13C4-PFOS	----	0.02	%	----	----	----	----	**92.3**
13C8-PFOA	----	0.002	%	**103**	**101**	**104**	**106**	----
13C8-PFOA	----	0.02	%	----	----	----	----	**97.5**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT120_250113	0990_POT198_250113	0990_POT201_250113	0990_POT124_250113	0990_POT114_250113
			Sampling date / time	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-011	ES2501556-012	ES2501556-013	ES2501556-014	ES2501556-015
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	----	**0.003**	**0.002**	**0.011**	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.02**	----	----	----	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	----	<0.002	<0.002	**0.011**	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.03**	----	----	----	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	----	<0.01	<0.01	<0.01	----
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	<0.02

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT120_250113	0990_POT198_250113	0990_POT201_250113	0990_POT124_250113	0990_POT114_250113
			Sampling date / time	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-011	ES2501556-012	ES2501556-013	ES2501556-014	ES2501556-015
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	----	<0.002	**0.003**	<0.002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	----	<0.005	<0.005	<0.005	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	<0.05
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	----	<0.005	<0.005	<0.005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	----	<0.005	<0.005	<0.005	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT120_250113	0990_POT198_250113	0990_POT201_250113	0990_POT124_250113	0990_POT114_250113
			Sampling date / time	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-011	ES2501556-012	ES2501556-013	ES2501556-014	ES2501556-015
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	----	<0.005	<0.005	<0.005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	----	<0.005	<0.005	<0.005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	----	<0.005	<0.005	<0.005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	----	<0.002	<0.002	<0.002	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	----	<0.002	<0.002	<0.002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	----	<0.005	<0.005	<0.005	----
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	----	<0.005	<0.005	<0.005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	----	<0.005	<0.005	<0.005	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT120_250113	0990_POT198_250113	0990_POT201_250113	0990_POT124_250113	0990_POT114_250113
			Sampling date / time	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-011	ES2501556-012	ES2501556-013	ES2501556-014	ES2501556-015
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	----	<0.005	<0.005	<0.005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	----	**0.003**	**0.005**	**0.022**	----
Sum of PFAS	----	0.01	µg/L	**0.05**	----	----	----	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	----	**0.003**	**0.002**	**0.022**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.05**	----	----	----	<0.01
Sum of PFAS (WA DER List)	----	0.002	µg/L	----	**0.003**	**0.005**	**0.022**	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.05**	----	----	----	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	----	**104**	**106**	**99.9**	----
13C4-PFOS	----	0.02	%	**95.0**	----	----	----	**99.7**
13C8-PFOA	----	0.002	%	----	**105**	**104**	**104**	----
13C8-PFOA	----	0.02	%	**94.8**	----	----	----	**96.0**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT127_250113	0990_OTH118_250113	0990_QC100_250113	0990_QC300_250113	0990_MW808_250113
			Sampling date / time	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	15-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-016	ES2501556-017	ES2501556-018	ES2501556-019	ES2501556-020
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	**0.003**	**0.002**	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	----	----	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	**0.003**	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	----	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	----	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	----	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	----	<0.02	<0.02	<0.02

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT127_250113	0990_OTH118_250113	0990_QC100_250113	0990_QC300_250113	0990_MW808_250113
			Sampling date / time	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	15-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-016	ES2501556-017	ES2501556-018	ES2501556-019	ES2501556-020
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	----	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	----	<0.05	<0.05	<0.05
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	----	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	----	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT127_250113	0990_OTH118_250113	0990_QC100_250113	0990_QC300_250113	0990_MW808_250113
			Sampling date / time	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	15-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-016	ES2501556-017	ES2501556-018	ES2501556-019	ES2501556-020
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	----	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	----	----	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	----	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	----	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	----	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	----	----	----
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	----	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	----	**0.16**	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT127_250113	0990_OTH118_250113	0990_QC100_250113	0990_QC300_250113	0990_MW808_250113
			Sampling date / time	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	15-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-016	ES2501556-017	ES2501556-018	ES2501556-019	ES2501556-020
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	----	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	----	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	**0.003**	**0.005**	----	----	----
Sum of PFAS	----	0.01	µg/L	----	----	**0.16**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	**0.003**	**0.005**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	----	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.002	µg/L	**0.003**	**0.005**	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	----	**0.16**	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**103**	**98.5**	----	----	----
13C4-PFOS	----	0.02	%	----	----	**90.6**	**96.8**	**94.8**
13C8-PFOA	----	0.002	%	**108**	**103**	----	----	----
13C8-PFOA	----	0.02	%	----	----	**94.4**	**92.4**	**86.6**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW809_250113	0990_MW810_250113	0990_MW812_250113	0990_MW813_250113	0990_POT131_250113
			Sampling date / time	15-Jan-2025 00:00	15-Jan-2025 00:00	15-Jan-2025 00:00	15-Jan-2025 00:00	16-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-021	ES2501556-022	ES2501556-024	ES2501556-025	ES2501556-028
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	----	----	----	----	<0.002
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	----	----	----	----	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	----	----	----	----	**0.004**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	----	----	----	----	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	----	----	----	----	**0.002**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.06**	**0.01**	<0.01	<0.01	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	----	----	----	----	<0.002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	----	----	----	----	<0.01
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	----	----	----	----	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	----	----	----	----	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	----	----	----	----	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW809_250113	0990_MW810_250113	0990_MW812_250113	0990_MW813_250113	0990_POT131_250113
			Sampling date / time	15-Jan-2025 00:00	15-Jan-2025 00:00	15-Jan-2025 00:00	15-Jan-2025 00:00	16-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-021	ES2501556-022	ES2501556-024	ES2501556-025	ES2501556-028
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	----	----	----	----	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	----	----	----	----	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	----	----	----	----	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	----	----	----	----	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	----	----	----	----	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	----	----	----	----	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	----	----	----	----	<0.005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	----	----	----	----	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	----	----	----	----	<0.002
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	----	----	----	----	<0.005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW809_250113	0990_MW810_250113	0990_MW812_250113	0990_MW813_250113	0990_POT131_250113
			Sampling date / time	15-Jan-2025 00:00	15-Jan-2025 00:00	15-Jan-2025 00:00	15-Jan-2025 00:00	16-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-021	ES2501556-022	ES2501556-024	ES2501556-025	ES2501556-028
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	----	----	----	----	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	----	----	----	----	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	----	----	----	----	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	----	----	----	----	<0.002
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	----	----	----	----	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	----	----	----	----	<0.005
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	----	----	----	----	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	----	----	----	----	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW809_250113	0990_MW810_250113	0990_MW812_250113	0990_MW813_250113	0990_POT131_250113
			Sampling date / time	15-Jan-2025 00:00	15-Jan-2025 00:00	15-Jan-2025 00:00	15-Jan-2025 00:00	16-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-021	ES2501556-022	ES2501556-024	ES2501556-025	ES2501556-028
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	----	----	----	----	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	----	----	----	----	**0.006**
Sum of PFAS	----	0.01	µg/L	**0.06**	**0.01**	<0.01	<0.01	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	----	----	----	----	**0.006**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.06**	**0.01**	<0.01	<0.01	----
Sum of PFAS (WA DER List)	----	0.002	µg/L	----	----	----	----	**0.006**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.06**	**0.01**	<0.01	<0.01	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	----	----	----	----	**103**
13C4-PFOS	----	0.02	%	**86.7**	**93.4**	**91.3**	**88.3**	----
13C8-PFOA	----	0.002	%	----	----	----	----	**103**
13C8-PFOA	----	0.02	%	**88.3**	**88.7**	**88.6**	**87.0**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC400_250113	0990_QC500_250113	0990_QC101_250113	0990_QC102_250113	0990_QC301_250113
			Sampling date / time	13-Jan-2025 00:00	13-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-029	ES2501556-030	ES2501556-031	ES2501556-032	ES2501556-033
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC400_250113	0990_QC500_250113	0990_QC101_250113	0990_QC102_250113	0990_QC301_250113
			Sampling date / time	13-Jan-2025 00:00	13-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-029	ES2501556-030	ES2501556-031	ES2501556-032	ES2501556-033
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**90.8**	**94.2**	**90.8**	**92.4**	**96.9**
13C8-PFOA	----	0.02	%	**88.8**	**91.0**	**90.0**	**92.6**	**95.0**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC401_250113	0990_SW153_250113	0990_SW108_250113	----	----
			Sampling date / time	14-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2501556-034	ES2501556-035	ES2501556-036	--------	--------
				Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	**0.02**	<0.01	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	**0.02**	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC401_250113	0990_SW153_250113	0990_SW108_250113	----	----
			Sampling date / time	14-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2501556-034	ES2501556-035	ES2501556-036	--------	--------
				Result	Result	Result	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	**0.02**	**0.02**	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	**0.02**	**0.02**	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	**0.02**	**0.02**	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**106**	**102**	**109**	----	----
13C8-PFOA	----	0.02	%	**106**	**107**	**105**	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2501556**	Page	: 1 of 11
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 22-Jan-2025
Order number	: 60676801 / 7.03.01	Date Analysis Commenced	: 24-Jan-2025
C-O-C number	: ----	Issue Date	: 30-Jan-2025
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3		
No. of samples received	: 36		
No. of samples analysed	: 33		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6332578)									
ES2501556-019	0990_QC300_250113	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6334178)									
ES2501331-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 (0.05)*	µg/L	1.48	1.70	13.7	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 (0.05)*	µg/L	1.72	1.81	4.7	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02 (0.05)*	µg/L	12.4	13.0	4.2	0% - 20%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
ES2501556-035	0990_SW153_250113	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.02	75.6	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6332578)									

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6332578) - continued									
ES2501556-019	0990_QC300_250113	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6334178)									
ES2501331-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 (0.05)*	µg/L	7.56	7.76	2.6	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02 (0.05)*	µg/L	1.84	1.75	5.2	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02 (0.05)*	µg/L	4.95	5.45	9.7	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02 (0.05)*	µg/L	0.92	0.81	13.2	0% - 50%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02 (0.05)*	µg/L	0.31	0.31	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02 (0.05)*	µg/L	0.24	0.25	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1 (0.2)*	µg/L	<0.2	<0.2	0.0	No Limit
ES2501556-035	0990_SW153_250113	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6332578)									
ES2501556-019	0990_QC300_250113	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6332578) - continued									
ES2501556-019	0990_QC300_250113	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6334178)									
ES2501331-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
ES2501556-035	0990_SW153_250113	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6332578)									
ES2501556-019	0990_QC300_250113	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6332578) - continued									
ES2501556-019	0990_QC300_250113	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6334178)									
ES2501331-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	2.25	2.21	2.1	0% - 20%
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2501556-035	0990_SW153_250113	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6332578)									
ES2501556-019	0990_QC300_250113	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6334178)									
ES2501331-001	Anonymous	EP231X: Sum of PFAS	----	0.01 (0.05)*	µg/L	33.7	35.0	4.0	0% - 20%
ES2501556-035	0990_SW153_250113	EP231X: Sum of PFAS	----	0.01	µg/L	0.02	0.02	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6330484)								
EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	0.025 µg/L	92.5	72.0	130
EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	0.025 µg/L	111	71.0	127
EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	0.025 µg/L	88.5	68.0	131
EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	0.025 µg/L	114	69.0	134
EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	0.025 µg/L	97.9	65.0	140
EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	0.025 µg/L	82.3	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6332578)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	98.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	94.5	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	86.9	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	95.5	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	90.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	90.3	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6334178)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	85.1	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	94.5	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	102	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	105	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	95.8	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	92.2	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6330484)								
EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	0.125 µg/L	111	73.0	129
EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.025 µg/L	112	72.0	129
EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	0.025 µg/L	100	72.0	129
EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	0.025 µg/L	97.5	72.0	130
EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	0.025 µg/L	112	71.0	133
EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	0.025 µg/L	120	69.0	130
EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	0.025 µg/L	115	71.0	129
EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	0.025 µg/L	92.1	69.0	133
EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	0.025 µg/L	109	72.0	134

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6330484) - continued								
EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	0.025 µg/L	78.1	65.0	144
EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	0.0625 µg/L	91.4	71.0	132
EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	0.025 µg/L	91.6	65.6	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6332578)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	106	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	99.9	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	93.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	101	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	103	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	101	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6334178)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	83.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	91.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	90.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	90.7	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	93.6	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	86.9	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	111	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	85.0	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.7	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	77.2	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6330484)								
EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	0.025 µg/L	90.0	67.0	137
EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	0.0625 µg/L	108	68.0	141
EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	0.0625 µg/L	96.9	61.1	139
EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	0.0625 µg/L	108	72.3	128

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6330484) - continued								
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	0.0625 µg/L	111	63.2	134
EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	0.025 µg/L	123	65.0	136
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	0.025 µg/L	109	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6332578)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	94.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	107	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	105	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.1	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	110	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	96.1	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	101	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6334178)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	103	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	101	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	101	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	75.7	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	89.9	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	88.3	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	78.3	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6330484)								
EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	0.025 µg/L	93.5	63.0	143
EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	0.025 µg/L	94.5	64.0	140
EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	0.025 µg/L	80.6	67.0	138
EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	0.025 µg/L	112	75.2	137
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6332578)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	96.9	63.0	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6332578) - continued								
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	91.7	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	121	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	92.5	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6334178)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	87.5	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	82.3	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	96.1	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	109	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6332578)							
ES2501556-029	0990_QC400_250113	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	97.9	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	97.5	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	94.9	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	96.9	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	99.0	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	95.8	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6334178)							
ES2501331-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	75.1	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	95.5	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	123	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	111	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	92.0	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	95.6	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6332578)							
ES2501556-029	0990_QC400_250113	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	104	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	105	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	105	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	95.1	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	104	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	103	69.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6332578) - continued							
ES2501556-029	0990_QC400_250113	EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	103	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	102	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	117	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	99.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	104	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6334178)							
ES2501331-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	90.1	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	84.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	105	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	92.7	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	97.9	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	80.3	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	98.7	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	90.1	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	118	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	101	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	86.5	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6332578)							
ES2501556-029	0990_QC400_250113	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	98.5	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	114	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	113	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	90.2	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	107	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	99.8	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	107	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6334178)							
ES2501331-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	99.1	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	107	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	91.9	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	75.8	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	94.0	57.6	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6334178) - continued							
ES2501331-002	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	72.6	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	87.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6332578)							
ES2501556-029	0990_QC400_250113	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	111	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	114	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	116	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	97.9	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6334178)							
ES2501331-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	69.8	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	78.9	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	107	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	119	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2501556**	Page	: 1 of 8
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 22-Jan-2025
Site	: ----	Issue Date	: 30-Jan-2025
Sampler	: [redacted]	No. of samples received	: 36
Order number	: 60676801 / 7.03.01	No. of samples analysed	: 33

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	0	17	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	36	8.33	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	0	17	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
0990_POT128_250113,	0990_POT129_250113,	**13-Jan-2025**	**24-Jan-2025**	12-Jul-2025	✓	**28-Jan-2025**	12-Jul-2025	✓
0990_POT119_250113,	0990_POT126_250113,							
0990_OTH117_250113,	0990_POT125_250113,							
0990_POT130_250113								
HDPE (no PTFE) (EP231X)								
0990_SW153_250113,	0990_SW108_250113	**13-Jan-2025**	**28-Jan-2025**	12-Jul-2025	✓	**29-Jan-2025**	12-Jul-2025	✓
HDPE (no PTFE) (EP231X)								
0990_POT112_250113,	0990_POT113_250113,	**13-Jan-2025**	**28-Jan-2025**	12-Jul-2025	✓	**30-Jan-2025**	12-Jul-2025	✓
0990_POT121_250113,	0990_QC400_250113,							
0990_QC500_250113								
HDPE (no PTFE) (EP231X-LL)								
0990_POT198_250113,	0990_POT201_250113,	**14-Jan-2025**	**24-Jan-2025**	13-Jul-2025	✓	**28-Jan-2025**	13-Jul-2025	✓
0990_POT124_250113,	0990_POT127_250113,							
0990_OTH118_250113								
HDPE (no PTFE) (EP231X)								
0990_QC401_250113		**14-Jan-2025**	**28-Jan-2025**	13-Jul-2025	✓	**29-Jan-2025**	13-Jul-2025	✓
HDPE (no PTFE) (EP231X)								
0990_POT120_250113,	0990_POT114_250113,	**14-Jan-2025**	**28-Jan-2025**	13-Jul-2025	✓	**30-Jan-2025**	13-Jul-2025	✓
0990_QC100_250113,	0990_QC300_250113,							
0990_QC101_250113,	0990_QC102_250113,							
0990_QC301_250113								
HDPE (no PTFE) (EP231X)								

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids - Continued							
0990_MW808_250113, 0990_MW809_250113, 0990_MW810_250113, 0990_MW812_250113, 0990_MW813_250113	15-Jan-2025	28-Jan-2025	14-Jul-2025	✓	30-Jan-2025	14-Jul-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT131_250113	16-Jan-2025	24-Jan-2025	15-Jul-2025	✓	28-Jan-2025	15-Jul-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X-LL) 0990_POT128_250113, 0990_POT129_250113, 0990_POT119_250113, 0990_POT126_250113, 0990_OTH117_250113, 0990_POT125_250113, 0990_POT130_250113	13-Jan-2025	24-Jan-2025	12-Jul-2025	✓	28-Jan-2025	12-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW153_250113, 0990_SW108_250113	13-Jan-2025	28-Jan-2025	12-Jul-2025	✓	29-Jan-2025	12-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT112_250113, 0990_POT113_250113, 0990_POT121_250113, 0990_QC400_250113, 0990_QC500_250113	13-Jan-2025	28-Jan-2025	12-Jul-2025	✓	30-Jan-2025	12-Jul-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT198_250113, 0990_POT201_250113, 0990_POT124_250113, 0990_POT127_250113, 0990_OTH118_250113	14-Jan-2025	24-Jan-2025	13-Jul-2025	✓	28-Jan-2025	13-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC401_250113	14-Jan-2025	28-Jan-2025	13-Jul-2025	✓	29-Jan-2025	13-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT120_250113, 0990_POT114_250113, 0990_QC100_250113, 0990_QC300_250113, 0990_QC101_250113, 0990_QC102_250113, 0990_QC301_250113	14-Jan-2025	28-Jan-2025	13-Jul-2025	✓	30-Jan-2025	13-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW808_250113, 0990_MW809_250113, 0990_MW810_250113, 0990_MW812_250113, 0990_MW813_250113	15-Jan-2025	28-Jan-2025	14-Jul-2025	✓	30-Jan-2025	14-Jul-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT131_250113	16-Jan-2025	24-Jan-2025	15-Jul-2025	✓	28-Jan-2025	15-Jul-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X-LL) 0990_POT128_250113, 0990_POT119_250113, 0990_OTH117_250113, 0990_POT130_250113	0990_POT129_250113, 0990_POT126_250113, 0990_POT125_250113,	**13-Jan-2025**	**24-Jan-2025**	12-Jul-2025	✓	**28-Jan-2025**	12-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW153_250113,	0990_SW108_250113	**13-Jan-2025**	**28-Jan-2025**	12-Jul-2025	✓	**29-Jan-2025**	12-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT112_250113, 0990_POT121_250113, 0990_QC500_250113	0990_POT113_250113, 0990_QC400_250113,	**13-Jan-2025**	**28-Jan-2025**	12-Jul-2025	✓	**30-Jan-2025**	12-Jul-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT198_250113, 0990_POT124_250113, 0990_OTH118_250113	0990_POT201_250113, 0990_POT127_250113,	**14-Jan-2025**	**24-Jan-2025**	13-Jul-2025	✓	**28-Jan-2025**	13-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC401_250113		**14-Jan-2025**	**28-Jan-2025**	13-Jul-2025	✓	**29-Jan-2025**	13-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT120_250113, 0990_QC100_250113, 0990_QC101_250113, 0990_QC301_250113	0990_POT114_250113, 0990_QC300_250113, 0990_QC102_250113,	**14-Jan-2025**	**28-Jan-2025**	13-Jul-2025	✓	**30-Jan-2025**	13-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW808_250113, 0990_MW810_250113, 0990_MW813_250113	0990_MW809_250113, 0990_MW812_250113,	**15-Jan-2025**	**28-Jan-2025**	14-Jul-2025	✓	**30-Jan-2025**	14-Jul-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT131_250113		**16-Jan-2025**	**24-Jan-2025**	15-Jul-2025	✓	**28-Jan-2025**	15-Jul-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
0990_POT128_250113, 0990_POT119_250113, 0990_OTH117_250113, 0990_POT130_250113	0990_POT129_250113, 0990_POT126_250113, 0990_POT125_250113,	**13-Jan-2025**	**24-Jan-2025**	12-Jul-2025	✓	**28-Jan-2025**	12-Jul-2025	✓
HDPE (no PTFE) (EP231X)								
0990_SW153_250113,	0990_SW108_250113	**13-Jan-2025**	**28-Jan-2025**	12-Jul-2025	✓	**29-Jan-2025**	12-Jul-2025	✓
HDPE (no PTFE) (EP231X)								
0990_POT112_250113, 0990_POT121_250113, 0990_QC500_250113	0990_POT113_250113, 0990_QC400_250113,	**13-Jan-2025**	**28-Jan-2025**	12-Jul-2025	✓	**30-Jan-2025**	12-Jul-2025	✓
HDPE (no PTFE) (EP231X-LL)								
0990_POT198_250113, 0990_POT124_250113, 0990_OTH118_250113	0990_POT201_250113, 0990_POT127_250113,	**14-Jan-2025**	**24-Jan-2025**	13-Jul-2025	✓	**28-Jan-2025**	13-Jul-2025	✓
HDPE (no PTFE) (EP231X)								
0990_QC401_250113		**14-Jan-2025**	**28-Jan-2025**	13-Jul-2025	✓	**29-Jan-2025**	13-Jul-2025	✓
HDPE (no PTFE) (EP231X)								
0990_POT120_250113, 0990_QC100_250113, 0990_QC101_250113, 0990_QC301_250113	0990_POT114_250113, 0990_QC300_250113, 0990_QC102_250113,	**14-Jan-2025**	**28-Jan-2025**	13-Jul-2025	✓	**30-Jan-2025**	13-Jul-2025	✓
HDPE (no PTFE) (EP231X)								
0990_MW808_250113, 0990_MW810_250113, 0990_MW813_250113	0990_MW809_250113, 0990_MW812_250113,	**15-Jan-2025**	**28-Jan-2025**	14-Jul-2025	✓	**30-Jan-2025**	14-Jul-2025	✓
HDPE (no PTFE) (EP231X-LL)								
0990_POT131_250113		**16-Jan-2025**	**24-Jan-2025**	15-Jul-2025	✓	**28-Jan-2025**	15-Jul-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X-LL) 0990_POT128_250113, 0990_POT119_250113, 0990_OTH117_250113, 0990_POT130_250113	0990_POT129_250113, 0990_POT126_250113, 0990_POT125_250113,	**13-Jan-2025**	**24-Jan-2025**	12-Jul-2025	✓	**28-Jan-2025**	12-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW153_250113,	0990_SW108_250113	**13-Jan-2025**	**28-Jan-2025**	12-Jul-2025	✓	**29-Jan-2025**	12-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT112_250113, 0990_POT121_250113, 0990_QC500_250113	0990_POT113_250113, 0990_QC400_250113,	**13-Jan-2025**	**28-Jan-2025**	12-Jul-2025	✓	**30-Jan-2025**	12-Jul-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT198_250113, 0990_POT124_250113, 0990_OTH118_250113	0990_POT201_250113, 0990_POT127_250113,	**14-Jan-2025**	**24-Jan-2025**	13-Jul-2025	✓	**28-Jan-2025**	13-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC401_250113		**14-Jan-2025**	**28-Jan-2025**	13-Jul-2025	✓	**29-Jan-2025**	13-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT120_250113, 0990_QC100_250113, 0990_QC101_250113, 0990_QC301_250113	0990_POT114_250113, 0990_QC300_250113, 0990_QC102_250113,	**14-Jan-2025**	**28-Jan-2025**	13-Jul-2025	✓	**30-Jan-2025**	13-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW808_250113, 0990_MW810_250113, 0990_MW813_250113	0990_MW809_250113, 0990_MW812_250113,	**15-Jan-2025**	**28-Jan-2025**	14-Jul-2025	✓	**30-Jan-2025**	14-Jul-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT131_250113		**16-Jan-2025**	**24-Jan-2025**	15-Jul-2025	✓	**28-Jan-2025**	15-Jul-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	0	17	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	36	**8.33**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	36	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	36	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	0	17	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	36	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is concentrated, combined with an equal volume of reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2501556**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_25	Page	: 1 of 4
Order number	: 60676801 / 7.03.01	Quote number	: ES2019AECOMAU0030 (SY/139/19 V3)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [redacted]		

Dates

Date Samples Received	: 22-Jan-2025 11:30	Issue Date	: 23-Jan-2025
Client Requested Due Date	: 29-Jan-2025	Scheduled Reporting Date	: **29-Jan-2025**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 18.8'C 22.8'C 19.2'C
Receipt Detail	:	No. of samples received / analysed	: 36 / 36

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- 23/01/2025 - This is an updated SRN which indicates the corrected project ID for this workorder.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP231X PFAS - Full Suite (31 analytes)	WATER - EP231X-LL PFAS - Full Suite (31 analytes) Low Level
ES2501556-001	13-Jan-2025 00:00	0990_POT112_250113	✓	
ES2501556-002	13-Jan-2025 00:00	0990_POT128_250113		✓
ES2501556-003	13-Jan-2025 00:00	0990_POT113_250113	✓	
ES2501556-004	13-Jan-2025 00:00	0990_POT129_250113		✓
ES2501556-005	13-Jan-2025 00:00	0990_POT119_250113		✓
ES2501556-006	13-Jan-2025 00:00	0990_POT126_250113		✓
ES2501556-007	13-Jan-2025 00:00	0990_OTH117_250113		✓
ES2501556-008	13-Jan-2025 00:00	0990_POT125_250113		✓
ES2501556-009	13-Jan-2025 00:00	0990_POT130_250113		✓
ES2501556-010	13-Jan-2025 00:00	0990_POT121_250113	✓	
ES2501556-011	14-Jan-2025 00:00	0990_POT120_250113	✓	
ES2501556-012	14-Jan-2025 00:00	0990_POT198_250113		✓
ES2501556-013	14-Jan-2025 00:00	0990_POT201_250113		✓
ES2501556-014	14-Jan-2025 00:00	0990_POT124_250113		✓
ES2501556-015	14-Jan-2025 00:00	0990_POT114_250113	✓	
ES2501556-016	14-Jan-2025 00:00	0990_POT127_250113		✓
ES2501556-017	14-Jan-2025 00:00	0990_OTH118_250113		✓
ES2501556-018	14-Jan-2025 00:00	0990_QC100_250113	✓	
ES2501556-019	14-Jan-2025 00:00	0990_QC300_250113	✓	
ES2501556-020	15-Jan-2025 00:00	0990_MW808_250113	✓	
ES2501556-021	15-Jan-2025 00:00	0990_MW809_250113	✓	
ES2501556-022	15-Jan-2025 00:00	0990_MW810_250113	✓	
ES2501556-023	15-Jan-2025 00:00	0990_MW811_250113	✓	
ES2501556-024	15-Jan-2025 00:00	0990_MW812_250113	✓	
ES2501556-025	15-Jan-2025 00:00	0990_MW813_250113	✓	
ES2501556-026	15-Jan-2025 00:00	0990_QC302_250113	✓	
ES2501556-027	15-Jan-2025 00:00	0990_QC402_250113	✓	
ES2501556-028	16-Jan-2025 00:00	0990_POT131_250113		✓
ES2501556-029	13-Jan-2025 00:00	0990_QC400_250113	✓	
ES2501556-030	13-Jan-2025 00:00	0990_QC500_250113	✓	
ES2501556-031	14-Jan-2025 00:00	0990_QC101_250113	✓	
ES2501556-032	14-Jan-2025 00:00	0990_QC102_250113	✓	
ES2501556-033	14-Jan-2025 00:00	0990_QC301_250113	✓	
ES2501556-034	14-Jan-2025 00:00	0990_QC401_250113	✓	
ES2501556-035	13-Jan-2025 00:00	0990_SW153_250113	✓	

			WATER - EP231X PFAS - Full Suite (31 analytes)	WATER - EP231X-LL PFAS - Full Suite (31 analytes) Low Level
ES2501556-036	13-Jan-2025 00:00	0990_SW108_250113	✓	

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2501556**	Page	: 1 of 27
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 22-Jan-2025 11:30
Order number	: 60676801 / 7.03.01	Date Analysis Commenced	: 24-Jan-2025
C-O-C number	: ----	Issue Date	: 30-Jan-2025 13:40
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3		
No. of samples received	: 36		
No. of samples analysed	: 33		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20ml or 125ml bottles have been tested in accordance with the QSM5.3 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_250113	0990_POT128_250113	0990_POT113_250113	0990_POT129_250113	0990_POT119_250113
			Sampling date / time	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-001	ES2501556-002	ES2501556-003	ES2501556-004	ES2501556-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	----	**0.003**	----	**0.004**	**0.005**
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	----	<0.002	----	**0.003**	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	----	**0.016**	----	**0.023**	**0.006**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	----	<0.002	----	**0.003**	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.02**	----	**0.10**	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	----	**0.028**	----	**0.038**	**0.015**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.03**	----	**0.08**	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	<0.02	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	----	<0.01	----	<0.01	<0.01
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	<0.1	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	----	**0.004**	----	**0.006**	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	<0.02	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_250113	0990_POT128_250113	0990_POT113_250113	0990_POT129_250113	0990_POT119_250113
			Sampling date / time	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-001	ES2501556-002	ES2501556-003	ES2501556-004	ES2501556-005
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	----	<0.002	----	<0.002	**0.005**
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	<0.01	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	<0.02	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	----	<0.005	----	<0.005	<0.005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	<0.05	----	----
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	----	<0.005	----	<0.005	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	----	<0.002	----	<0.002	<0.002
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	<0.02	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	----	<0.005	----	<0.005	<0.005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	<0.05	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_250113	0990_POT128_250113	0990_POT113_250113	0990_POT129_250113	0990_POT119_250113
			Sampling date / time	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-001	ES2501556-002	ES2501556-003	ES2501556-004	ES2501556-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	----	<0.005	----	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	----	<0.005	----	<0.005	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	<0.05	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	----	<0.005	----	<0.005	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	----	<0.002	----	<0.002	<0.002
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	<0.02	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	----	<0.002	----	<0.002	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	<0.02	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	----	<0.005	----	<0.005	<0.005
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	<0.05	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	----	<0.005	----	<0.005	**0.016**
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	**0.07**	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	----	<0.005	----	<0.005	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT112_250113	0990_POT128_250113	0990_POT113_250113	0990_POT129_250113	0990_POT119_250113
			Sampling date / time	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-001	ES2501556-002	ES2501556-003	ES2501556-004	ES2501556-005
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	<0.05	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	----	<0.005	----	<0.005	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	<0.05	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	----	**0.051**	----	**0.077**	**0.047**
Sum of PFAS	----	0.01	µg/L	**0.05**	----	**0.25**	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	----	**0.044**	----	**0.061**	**0.021**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.05**	----	**0.18**	----	----
Sum of PFAS (WA DER List)	----	0.002	µg/L	----	**0.051**	----	**0.071**	**0.047**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.05**	----	**0.25**	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	----	**101**	----	**105**	**97.0**
13C4-PFOS	----	0.02	%	**91.6**	----	**92.1**	----	----
13C8-PFOA	----	0.002	%	----	**102**	----	**101**	**99.9**
13C8-PFOA	----	0.02	%	**99.5**	----	**99.4**	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT126_250113	0990_OTH117_250113	0990_POT125_250113	0990_POT130_250113	0990_POT121_250113
			Sampling date / time	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-006	ES2501556-007	ES2501556-008	ES2501556-009	ES2501556-010
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	----	----	----	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	**0.010**	**0.003**	**0.004**	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	----	----	----	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	----	----	----	----	**0.02**
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	----	----	----	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	**0.003**	**0.016**	**0.003**	<0.002	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	----	----	----	**0.02**
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	----	----	----	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	----	----	----	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	----	----	----	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	**0.004**	<0.002	<0.002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	----	----	----	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	----	----	----	<0.02

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT126_250113	0990_OTH117_250113	0990_POT125_250113	0990_POT130_250113	0990_POT121_250113
			Sampling date / time	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-006	ES2501556-007	ES2501556-008	ES2501556-009	ES2501556-010
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	----	----	----	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	----	----	----	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	----	----	----	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	----	----	----	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	----	----	----	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	----	----	----	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	----	----	----	<0.05
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	----	----	----	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	----	----	----	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT126_250113	0990_OTH117_250113	0990_POT125_250113	0990_POT130_250113	0990_POT121_250113
			Sampling date / time	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-006	ES2501556-007	ES2501556-008	ES2501556-009	ES2501556-010
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	----	----	----	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	----	----	----	----	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	----	----	----	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	----	----	----	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	<0.002	<0.002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	----	----	----	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	----	----	----	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	**0.016**	<0.005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	----	----	----	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT126_250113	0990_OTH117_250113	0990_POT125_250113	0990_POT130_250113	0990_POT121_250113
			Sampling date / time	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-006	ES2501556-007	ES2501556-008	ES2501556-009	ES2501556-010
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	----	----	----	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	<0.005	<0.005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	----	----	----	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	**0.003**	**0.030**	**0.022**	**0.004**	----
Sum of PFAS	----	0.01	µg/L	----	----	----	----	**0.04**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	**0.003**	**0.026**	**0.006**	**0.004**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	----	----	----	**0.04**
Sum of PFAS (WA DER List)	----	0.002	µg/L	**0.003**	**0.030**	**0.022**	**0.004**	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	----	----	----	**0.04**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**98.2**	**103**	**104**	**102**	----
13C4-PFOS	----	0.02	%	----	----	----	----	**92.3**
13C8-PFOA	----	0.002	%	**103**	**101**	**104**	**106**	----
13C8-PFOA	----	0.02	%	----	----	----	----	**97.5**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT120_250113	0990_POT198_250113	0990_POT201_250113	0990_POT124_250113	0990_POT114_250113
			Sampling date / time	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-011	ES2501556-012	ES2501556-013	ES2501556-014	ES2501556-015
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	----	**0.003**	**0.002**	**0.011**	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.02**	----	----	----	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	----	<0.002	<0.002	**0.011**	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.03**	----	----	----	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	----	<0.01	<0.01	<0.01	----
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	<0.02

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT120_250113	0990_POT198_250113	0990_POT201_250113	0990_POT124_250113	0990_POT114_250113
			Sampling date / time	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-011	ES2501556-012	ES2501556-013	ES2501556-014	ES2501556-015
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	----	<0.002	**0.003**	<0.002	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	----	<0.005	<0.005	<0.005	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	<0.05
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	----	<0.005	<0.005	<0.005	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	----	<0.002	<0.002	<0.002	----
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	----	<0.005	<0.005	<0.005	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT120_250113	0990_POT198_250113	0990_POT201_250113	0990_POT124_250113	0990_POT114_250113
			Sampling date / time	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-011	ES2501556-012	ES2501556-013	ES2501556-014	ES2501556-015
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	----	<0.005	<0.005	<0.005	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	----	<0.005	<0.005	<0.005	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	----	<0.005	<0.005	<0.005	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	----	<0.002	<0.002	<0.002	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	----	<0.002	<0.002	<0.002	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	----	<0.005	<0.005	<0.005	----
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	----	<0.005	<0.005	<0.005	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	----	<0.005	<0.005	<0.005	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT120_250113	0990_POT198_250113	0990_POT201_250113	0990_POT124_250113	0990_POT114_250113
			Sampling date / time	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-011	ES2501556-012	ES2501556-013	ES2501556-014	ES2501556-015
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	----	<0.005	<0.005	<0.005	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	----	**0.003**	**0.005**	**0.022**	----
Sum of PFAS	----	0.01	µg/L	**0.05**	----	----	----	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	----	**0.003**	**0.002**	**0.022**	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.05**	----	----	----	<0.01
Sum of PFAS (WA DER List)	----	0.002	µg/L	----	**0.003**	**0.005**	**0.022**	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.05**	----	----	----	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	----	**104**	**106**	**99.9**	----
13C4-PFOS	----	0.02	%	**95.0**	----	----	----	**99.7**
13C8-PFOA	----	0.002	%	----	**105**	**104**	**104**	----
13C8-PFOA	----	0.02	%	**94.8**	----	----	----	**96.0**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT127_250113	0990_OTH118_250113	0990_QC100_250113	0990_QC300_250113	0990_MW808_250113
			Sampling date / time	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	15-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-016	ES2501556-017	ES2501556-018	ES2501556-019	ES2501556-020
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	**0.003**	**0.002**	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	----	----	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	**0.003**	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	----	----	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	----	----	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	<0.01	----	----	----
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	----	----	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	----	----	<0.02	<0.02	<0.02

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT127_250113	0990_OTH118_250113	0990_QC100_250113	0990_QC300_250113	0990_MW808_250113
			Sampling date / time	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	15-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-016	ES2501556-017	ES2501556-018	ES2501556-019	ES2501556-020
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	----	----	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	----	----	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	<0.005	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	----	----	<0.05	<0.05	<0.05
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	<0.005	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	<0.002	----	----	----
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	----	----	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	<0.005	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	----	----	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT127_250113	0990_OTH118_250113	0990_QC100_250113	0990_QC300_250113	0990_MW808_250113
			Sampling date / time	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	15-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-016	ES2501556-017	ES2501556-018	ES2501556-019	ES2501556-020
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	<0.005	----	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	----	----	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	<0.005	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	----	----	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	<0.005	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	----	----	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	<0.002	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	----	----	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	<0.002	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	----	----	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	<0.005	----	----	----
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	----	----	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	<0.005	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	----	----	**0.16**	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	<0.005	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_POT127_250113	0990_OTH118_250113	0990_QC100_250113	0990_QC300_250113	0990_MW808_250113
			Sampling date / time	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	15-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-016	ES2501556-017	ES2501556-018	ES2501556-019	ES2501556-020
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	----	----	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	<0.005	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	----	----	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	**0.003**	**0.005**	----	----	----
Sum of PFAS	----	0.01	µg/L	----	----	**0.16**	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	**0.003**	**0.005**	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	----	----	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.002	µg/L	**0.003**	**0.005**	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	----	----	**0.16**	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	**103**	**98.5**	----	----	----
13C4-PFOS	----	0.02	%	----	----	**90.6**	**96.8**	**94.8**
13C8-PFOA	----	0.002	%	**108**	**103**	----	----	----
13C8-PFOA	----	0.02	%	----	----	**94.4**	**92.4**	**86.6**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW809_250113	0990_MW810_250113	0990_MW812_250113	0990_MW813_250113	0990_POT131_250113
			Sampling date / time	15-Jan-2025 00:00	15-Jan-2025 00:00	15-Jan-2025 00:00	15-Jan-2025 00:00	16-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-021	ES2501556-022	ES2501556-024	ES2501556-025	ES2501556-028
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	----	----	----	----	<0.002
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	----	----	----	----	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	----	----	----	----	**0.004**
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	----	----	----	----	<0.002
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	----	----	----	----	**0.002**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.06**	**0.01**	<0.01	<0.01	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	----	----	----	----	<0.002
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	----	----	----	----	<0.01
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	----	----	----	----	<0.002
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	----	----	----	----	<0.002
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	----	----	----	----	<0.002
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW809_250113	0990_MW810_250113	0990_MW812_250113	0990_MW813_250113	0990_POT131_250113
			Sampling date / time	15-Jan-2025 00:00	15-Jan-2025 00:00	15-Jan-2025 00:00	15-Jan-2025 00:00	16-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-021	ES2501556-022	ES2501556-024	ES2501556-025	ES2501556-028
				Result	Result	Result	Result	Result
EP231B: Perfluoroalkyl Carboxylic Acids - Continued								
Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	----	----	----	----	<0.002
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----
Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	----	----	----	----	<0.002
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	----	----	----	----	<0.002
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	----	----	----	----	<0.002
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	----	----	----	----	<0.002
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	----	----	----	----	<0.002
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	----	----	----	----	<0.005
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	----	----	----	----	<0.005
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	----	----	----	----	<0.002
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	----	----	----	----	<0.005
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW809_250113	0990_MW810_250113	0990_MW812_250113	0990_MW813_250113	0990_POT131_250113
			Sampling date / time	15-Jan-2025 00:00	15-Jan-2025 00:00	15-Jan-2025 00:00	15-Jan-2025 00:00	16-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-021	ES2501556-022	ES2501556-024	ES2501556-025	ES2501556-028
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	----	----	----	----	<0.005
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	----	----	----	----	<0.005
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	----	----	----	----	<0.005
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	----	----	----	----	<0.002
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	----	----	----	----	<0.002
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	----	----	----	----	<0.005
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	----	----	----	----	<0.005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	----	----	----	----	<0.005

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_MW809_250113	0990_MW810_250113	0990_MW812_250113	0990_MW813_250113	0990_POT131_250113
			Sampling date / time	15-Jan-2025 00:00	15-Jan-2025 00:00	15-Jan-2025 00:00	15-Jan-2025 00:00	16-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-021	ES2501556-022	ES2501556-024	ES2501556-025	ES2501556-028
				Result	Result	Result	Result	Result
EP231D: (n:2) Fluorotelomer Sulfonic Acids - Continued								
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	----	----	----	----	<0.005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.002	µg/L	----	----	----	----	**0.006**
Sum of PFAS	----	0.01	µg/L	**0.06**	**0.01**	<0.01	<0.01	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.002	µg/L	----	----	----	----	**0.006**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.06**	**0.01**	<0.01	<0.01	----
Sum of PFAS (WA DER List)	----	0.002	µg/L	----	----	----	----	**0.006**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.06**	**0.01**	<0.01	<0.01	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.002	%	----	----	----	----	**103**
13C4-PFOS	----	0.02	%	**86.7**	**93.4**	**91.3**	**88.3**	----
13C8-PFOA	----	0.002	%	----	----	----	----	**103**
13C8-PFOA	----	0.02	%	**88.3**	**88.7**	**88.6**	**87.0**	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC400_250113	0990_QC500_250113	0990_QC101_250113	0990_QC102_250113	0990_QC301_250113
			Sampling date / time	13-Jan-2025 00:00	13-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-029	ES2501556-030	ES2501556-031	ES2501556-032	ES2501556-033
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC400_250113	0990_QC500_250113	0990_QC101_250113	0990_QC102_250113	0990_QC301_250113
			Sampling date / time	13-Jan-2025 00:00	13-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00	14-Jan-2025 00:00
Compound	CAS Number	LOR	Unit	ES2501556-029	ES2501556-030	ES2501556-031	ES2501556-032	ES2501556-033
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**90.8**	**94.2**	**90.8**	**92.4**	**96.9**
13C8-PFOA	----	0.02	%	**88.8**	**91.0**	**90.0**	**92.6**	**95.0**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC401_250113	0990_SW153_250113	0990_SW108_250113	----	----
			Sampling date / time	14-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2501556-034	ES2501556-035	ES2501556-036	--------	--------
				Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	**0.02**	<0.01	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	**0.02**	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC401_250113	0990_SW153_250113	0990_SW108_250113	----	----
			Sampling date / time	14-Jan-2025 00:00	13-Jan-2025 00:00	13-Jan-2025 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2501556-034	ES2501556-035	ES2501556-036	--------	--------
				Result	Result	Result	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	**0.02**	**0.02**	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	**0.02**	**0.02**	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	**0.02**	**0.02**	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**106**	**102**	**109**	----	----
13C8-PFOA	----	0.02	%	**106**	**107**	**105**	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2501556**	Page	: 1 of 11
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	[redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 22-Jan-2025
Order number	: 60676801 / 7.03.01	Date Analysis Commenced	: 24-Jan-2025
C-O-C number	: ----	Issue Date	: 30-Jan-2025
Sampler	: [redacted]		
Site	: ----		
Quote number	: SY/139/19 V3		
No. of samples received	: 36		
No. of samples analysed	: 33		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC
* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6332578)									
ES2501556-019	0990_QC300_250113	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6334178)									
ES2501331-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01 (0.05)*	µg/L	1.48	1.70	13.7	0% - 20%
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01 (0.05)*	µg/L	1.72	1.81	4.7	0% - 20%
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02 (0.05)*	µg/L	12.4	13.0	4.2	0% - 20%
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
ES2501556-035	0990_SW153_250113	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	0.02	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.02	75.6	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6332578)									

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6332578) - continued									
ES2501556-019	0990_QC300_250113	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6334178)									
ES2501331-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01 (0.05)*	µg/L	7.56	7.76	2.6	0% - 20%
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02 (0.05)*	µg/L	1.84	1.75	5.2	0% - 20%
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02 (0.05)*	µg/L	4.95	5.45	9.7	0% - 20%
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02 (0.05)*	µg/L	0.92	0.81	13.2	0% - 50%
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02 (0.05)*	µg/L	0.31	0.31	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02 (0.05)*	µg/L	0.24	0.25	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1 (0.2)*	µg/L	<0.2	<0.2	0.0	No Limit
ES2501556-035	0990_SW153_250113	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6332578)									
ES2501556-019	0990_QC300_250113	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6332578) - continued									
ES2501556-019	0990_QC300_250113	EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6334178)									
ES2501331-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02 (0.05)*	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05 (0.12)*	µg/L	<0.12	<0.12	0.0	No Limit
ES2501556-035	0990_SW153_250113	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6332578)									
ES2501556-019	0990_QC300_250113	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6332578) - continued									
ES2501556-019	0990_QC300_250113	EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6334178)									
ES2501331-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	2.25	2.21	2.1	0% - 20%
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
ES2501556-035	0990_SW153_250113	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6332578)									
ES2501556-019	0990_QC300_250113	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6334178)									
ES2501331-001	Anonymous	EP231X: Sum of PFAS	----	0.01 (0.05)*	µg/L	33.7	35.0	4.0	0% - 20%
ES2501556-035	0990_SW153_250113	EP231X: Sum of PFAS	----	0.01	µg/L	0.02	0.02	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6330484)								
EP231X-LL: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.002	µg/L	<0.002	0.025 µg/L	92.5	72.0	130
EP231X-LL: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.002	µg/L	<0.002	0.025 µg/L	111	71.0	127
EP231X-LL: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.002	µg/L	<0.002	0.025 µg/L	88.5	68.0	131
EP231X-LL: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.002	µg/L	<0.002	0.025 µg/L	114	69.0	134
EP231X-LL: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.002	µg/L	<0.002	0.025 µg/L	97.9	65.0	140
EP231X-LL: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.002	µg/L	<0.002	0.025 µg/L	82.3	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6332578)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	98.2	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	94.5	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	86.9	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	95.5	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	90.2	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	90.3	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6334178)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	85.1	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	94.5	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	102	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	105	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	95.8	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	92.2	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6330484)								
EP231X-LL: Perfluorobutanoic acid (PFBA)	375-22-4	0.01	µg/L	<0.01	0.125 µg/L	111	73.0	129
EP231X-LL: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.002	µg/L	<0.002	0.025 µg/L	112	72.0	129
EP231X-LL: Perfluorohexanoic acid (PFHxA)	307-24-4	0.002	µg/L	<0.002	0.025 µg/L	100	72.0	129
EP231X-LL: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.002	µg/L	<0.002	0.025 µg/L	97.5	72.0	130
EP231X-LL: Perfluorooctanoic acid (PFOA)	335-67-1	0.002	µg/L	<0.002	0.025 µg/L	112	71.0	133
EP231X-LL: Perfluorononanoic acid (PFNA)	375-95-1	0.002	µg/L	<0.002	0.025 µg/L	120	69.0	130
EP231X-LL: Perfluorodecanoic acid (PFDA)	335-76-2	0.002	µg/L	<0.002	0.025 µg/L	115	71.0	129
EP231X-LL: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.002	µg/L	<0.002	0.025 µg/L	92.1	69.0	133
EP231X-LL: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.002	µg/L	<0.002	0.025 µg/L	109	72.0	134

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6330484) - continued								
EP231X-LL: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.002	µg/L	<0.002	0.025 µg/L	78.1	65.0	144
EP231X-LL: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.005	µg/L	<0.005	0.0625 µg/L	91.4	71.0	132
EP231X-LL: Perfluorohexadecanoic acid (PFHxDA)	67905-19-5	0.005	µg/L	<0.005	0.025 µg/L	91.6	65.6	133
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6332578)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	106	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	99.9	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	93.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	101	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	106	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	103	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	104	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	114	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	101	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	104	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6334178)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	83.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	91.6	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	90.4	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	90.7	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	93.6	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	86.9	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	111	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	85.0	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	87.7	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	77.2	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6330484)								
EP231X-LL: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.002	µg/L	<0.002	0.025 µg/L	90.0	67.0	137
EP231X-LL: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.005	µg/L	<0.005	0.0625 µg/L	108	68.0	141
EP231X-LL: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.005	µg/L	<0.005	0.0625 µg/L	96.9	61.1	139
EP231X-LL: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.005	µg/L	<0.005	0.0625 µg/L	108	72.3	128

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6330484) - continued								
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.005	µg/L	<0.005	0.0625 µg/L	111	63.2	134
EP231X-LL: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.002	µg/L	<0.002	0.025 µg/L	123	65.0	136
EP231X-LL: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.002	µg/L	<0.002	0.025 µg/L	109	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6332578)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	94.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	107	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	105	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	90.1	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	110	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	96.1	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	101	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6334178)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	103	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	101	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	101	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	75.7	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	89.9	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	88.3	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	78.3	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6330484)								
EP231X-LL: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.005	µg/L	<0.005	0.025 µg/L	93.5	63.0	143
EP231X-LL: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.005	µg/L	<0.005	0.025 µg/L	94.5	64.0	140
EP231X-LL: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.005	µg/L	<0.005	0.025 µg/L	80.6	67.0	138
EP231X-LL: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.005	µg/L	<0.005	0.025 µg/L	112	75.2	137
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6332578)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	96.9	63.0	143

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6332578) - continued								
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	91.7	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	121	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	92.5	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6334178)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	87.5	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	82.3	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	96.1	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	109	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6332578)							
ES2501556-029	0990_QC400_250113	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	97.9	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	97.5	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	94.9	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	96.9	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	99.0	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	95.8	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6334178)							
ES2501331-002	Anonymous	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	75.1	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	95.5	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	123	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	111	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	92.0	65.0	140
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	95.6	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6332578)							
ES2501556-029	0990_QC400_250113	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	104	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	105	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	105	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	95.1	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	104	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	103	69.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6332578) - continued							
ES2501556-029	0990_QC400_250113	EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	103	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	102	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	117	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	99.5	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	104	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6334178)							
ES2501331-002	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	90.1	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	84.0	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	105	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	92.7	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	97.9	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	80.3	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	98.7	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	90.1	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	118	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	101	65.0	144
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	86.5	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6332578)							
ES2501556-029	0990_QC400_250113	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	98.5	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	114	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	113	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	90.2	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	107	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	99.8	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	107	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6334178)							
ES2501331-002	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	99.1	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	107	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	91.9	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	75.8	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	94.0	57.6	145

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6334178) - continued							
ES2501331-002	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	72.6	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	87.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6332578)							
ES2501556-029	0990_QC400_250113	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	111	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	114	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	116	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	97.9	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6334178)							
ES2501331-002	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	69.8	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	78.9	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	107	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	119	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2501556**	Page	: 1 of 8
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_25	Date Samples Received	: 22-Jan-2025
Site	: ----	Issue Date	: 30-Jan-2025
Sampler	: [redacted]	No. of samples received	: 36
Order number	: 60676801 / 7.03.01	No. of samples analysed	: 33

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	0	17	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	36	8.33	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	0	17	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*		*Sample Date*	*Extraction / Preparation*			*Analysis*		
			Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
0990_POT128_250113,	0990_POT129_250113,	**13-Jan-2025**	**24-Jan-2025**	12-Jul-2025	✓	**28-Jan-2025**	12-Jul-2025	✓
0990_POT119_250113,	0990_POT126_250113,							
0990_OTH117_250113,	0990_POT125_250113,							
0990_POT130_250113								
HDPE (no PTFE) (EP231X)								
0990_SW153_250113,	0990_SW108_250113	**13-Jan-2025**	**28-Jan-2025**	12-Jul-2025	✓	**29-Jan-2025**	12-Jul-2025	✓
HDPE (no PTFE) (EP231X)								
0990_POT112_250113,	0990_POT113_250113,	**13-Jan-2025**	**28-Jan-2025**	12-Jul-2025	✓	**30-Jan-2025**	12-Jul-2025	✓
0990_POT121_250113,	0990_QC400_250113,							
0990_QC500_250113								
HDPE (no PTFE) (EP231X-LL)								
0990_POT198_250113,	0990_POT201_250113,	**14-Jan-2025**	**24-Jan-2025**	13-Jul-2025	✓	**28-Jan-2025**	13-Jul-2025	✓
0990_POT124_250113,	0990_POT127_250113,							
0990_OTH118_250113								
HDPE (no PTFE) (EP231X)								
0990_QC401_250113		**14-Jan-2025**	**28-Jan-2025**	13-Jul-2025	✓	**29-Jan-2025**	13-Jul-2025	✓
HDPE (no PTFE) (EP231X)								
0990_POT120_250113,	0990_POT114_250113,	**14-Jan-2025**	**28-Jan-2025**	13-Jul-2025	✓	**30-Jan-2025**	13-Jul-2025	✓
0990_QC100_250113,	0990_QC300_250113,							
0990_QC101_250113,	0990_QC102_250113,							
0990_QC301_250113								
HDPE (no PTFE) (EP231X)								

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231A: Perfluoroalkyl Sulfonic Acids - Continued							
0990_MW808_250113, 0990_MW809_250113, 0990_MW810_250113, 0990_MW812_250113, 0990_MW813_250113	15-Jan-2025	28-Jan-2025	14-Jul-2025	✓	30-Jan-2025	14-Jul-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT131_250113	16-Jan-2025	24-Jan-2025	15-Jul-2025	✓	28-Jan-2025	15-Jul-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X-LL) 0990_POT128_250113, 0990_POT129_250113, 0990_POT119_250113, 0990_POT126_250113, 0990_OTH117_250113, 0990_POT125_250113, 0990_POT130_250113	13-Jan-2025	24-Jan-2025	12-Jul-2025	✓	28-Jan-2025	12-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW153_250113, 0990_SW108_250113	13-Jan-2025	28-Jan-2025	12-Jul-2025	✓	29-Jan-2025	12-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT112_250113, 0990_POT113_250113, 0990_POT121_250113, 0990_QC400_250113, 0990_QC500_250113	13-Jan-2025	28-Jan-2025	12-Jul-2025	✓	30-Jan-2025	12-Jul-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT198_250113, 0990_POT201_250113, 0990_POT124_250113, 0990_POT127_250113, 0990_OTH118_250113	14-Jan-2025	24-Jan-2025	13-Jul-2025	✓	28-Jan-2025	13-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC401_250113	14-Jan-2025	28-Jan-2025	13-Jul-2025	✓	29-Jan-2025	13-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT120_250113, 0990_POT114_250113, 0990_QC100_250113, 0990_QC300_250113, 0990_QC101_250113, 0990_QC102_250113, 0990_QC301_250113	14-Jan-2025	28-Jan-2025	13-Jul-2025	✓	30-Jan-2025	13-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW808_250113, 0990_MW809_250113, 0990_MW810_250113, 0990_MW812_250113, 0990_MW813_250113	15-Jan-2025	28-Jan-2025	14-Jul-2025	✓	30-Jan-2025	14-Jul-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT131_250113	16-Jan-2025	24-Jan-2025	15-Jul-2025	✓	28-Jan-2025	15-Jul-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231C: Perfluoroalkyl Sulfonamides								
HDPE (no PTFE) (EP231X-LL) 0990_POT128_250113, 0990_POT119_250113, 0990_OTH117_250113, 0990_POT130_250113	0990_POT129_250113, 0990_POT126_250113, 0990_POT125_250113,	**13-Jan-2025**	**24-Jan-2025**	12-Jul-2025	✓	**28-Jan-2025**	12-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW153_250113,	0990_SW108_250113	**13-Jan-2025**	**28-Jan-2025**	12-Jul-2025	✓	**29-Jan-2025**	12-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT112_250113, 0990_POT121_250113, 0990_QC500_250113	0990_POT113_250113, 0990_QC400_250113,	**13-Jan-2025**	**28-Jan-2025**	12-Jul-2025	✓	**30-Jan-2025**	12-Jul-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT198_250113, 0990_POT124_250113, 0990_OTH118_250113	0990_POT201_250113, 0990_POT127_250113,	**14-Jan-2025**	**24-Jan-2025**	13-Jul-2025	✓	**28-Jan-2025**	13-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC401_250113		**14-Jan-2025**	**28-Jan-2025**	13-Jul-2025	✓	**29-Jan-2025**	13-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT120_250113, 0990_QC100_250113, 0990_QC101_250113, 0990_QC301_250113	0990_POT114_250113, 0990_QC300_250113, 0990_QC102_250113,	**14-Jan-2025**	**28-Jan-2025**	13-Jul-2025	✓	**30-Jan-2025**	13-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW808_250113, 0990_MW810_250113, 0990_MW813_250113	0990_MW809_250113, 0990_MW812_250113,	**15-Jan-2025**	**28-Jan-2025**	14-Jul-2025	✓	**30-Jan-2025**	14-Jul-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT131_250113		**16-Jan-2025**	**24-Jan-2025**	15-Jul-2025	✓	**28-Jan-2025**	15-Jul-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
HDPE (no PTFE) (EP231X-LL)								
0990_POT128_250113, 0990_POT119_250113, 0990_OTH117_250113, 0990_POT130_250113	0990_POT129_250113, 0990_POT126_250113, 0990_POT125_250113,	**13-Jan-2025**	**24-Jan-2025**	12-Jul-2025	✓	**28-Jan-2025**	12-Jul-2025	✓
HDPE (no PTFE) (EP231X)								
0990_SW153_250113,	0990_SW108_250113	**13-Jan-2025**	**28-Jan-2025**	12-Jul-2025	✓	**29-Jan-2025**	12-Jul-2025	✓
HDPE (no PTFE) (EP231X)								
0990_POT112_250113, 0990_POT121_250113, 0990_QC500_250113	0990_POT113_250113, 0990_QC400_250113,	**13-Jan-2025**	**28-Jan-2025**	12-Jul-2025	✓	**30-Jan-2025**	12-Jul-2025	✓
HDPE (no PTFE) (EP231X-LL)								
0990_POT198_250113, 0990_POT124_250113, 0990_OTH118_250113	0990_POT201_250113, 0990_POT127_250113,	**14-Jan-2025**	**24-Jan-2025**	13-Jul-2025	✓	**28-Jan-2025**	13-Jul-2025	✓
HDPE (no PTFE) (EP231X)								
0990_QC401_250113		**14-Jan-2025**	**28-Jan-2025**	13-Jul-2025	✓	**29-Jan-2025**	13-Jul-2025	✓
HDPE (no PTFE) (EP231X)								
0990_POT120_250113, 0990_QC100_250113, 0990_QC101_250113, 0990_QC301_250113	0990_POT114_250113, 0990_QC300_250113, 0990_QC102_250113,	**14-Jan-2025**	**28-Jan-2025**	13-Jul-2025	✓	**30-Jan-2025**	13-Jul-2025	✓
HDPE (no PTFE) (EP231X)								
0990_MW808_250113, 0990_MW810_250113, 0990_MW813_250113	0990_MW809_250113, 0990_MW812_250113,	**15-Jan-2025**	**28-Jan-2025**	14-Jul-2025	✓	**30-Jan-2025**	14-Jul-2025	✓
HDPE (no PTFE) (EP231X-LL)								
0990_POT131_250113		**16-Jan-2025**	**24-Jan-2025**	15-Jul-2025	✓	**28-Jan-2025**	15-Jul-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231P: PFAS Sums								
HDPE (no PTFE) (EP231X-LL) 0990_POT128_250113, 0990_POT119_250113, 0990_OTH117_250113, 0990_POT130_250113	0990_POT129_250113, 0990_POT126_250113, 0990_POT125_250113,	**13-Jan-2025**	**24-Jan-2025**	12-Jul-2025	✓	**28-Jan-2025**	12-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW153_250113,	0990_SW108_250113	**13-Jan-2025**	**28-Jan-2025**	12-Jul-2025	✓	**29-Jan-2025**	12-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT112_250113, 0990_POT121_250113, 0990_QC500_250113	0990_POT113_250113, 0990_QC400_250113,	**13-Jan-2025**	**28-Jan-2025**	12-Jul-2025	✓	**30-Jan-2025**	12-Jul-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT198_250113, 0990_POT124_250113, 0990_OTH118_250113	0990_POT201_250113, 0990_POT127_250113,	**14-Jan-2025**	**24-Jan-2025**	13-Jul-2025	✓	**28-Jan-2025**	13-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_QC401_250113		**14-Jan-2025**	**28-Jan-2025**	13-Jul-2025	✓	**29-Jan-2025**	13-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_POT120_250113, 0990_QC100_250113, 0990_QC101_250113, 0990_QC301_250113	0990_POT114_250113, 0990_QC300_250113, 0990_QC102_250113,	**14-Jan-2025**	**28-Jan-2025**	13-Jul-2025	✓	**30-Jan-2025**	13-Jul-2025	✓
HDPE (no PTFE) (EP231X) 0990_MW808_250113, 0990_MW810_250113, 0990_MW813_250113	0990_MW809_250113, 0990_MW812_250113,	**15-Jan-2025**	**28-Jan-2025**	14-Jul-2025	✓	**30-Jan-2025**	14-Jul-2025	✓
HDPE (no PTFE) (EP231X-LL) 0990_POT131_250113		**16-Jan-2025**	**24-Jan-2025**	15-Jul-2025	✓	**28-Jan-2025**	15-Jul-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	0	17	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	3	36	**8.33**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	36	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	36	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	0	17	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	36	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.
Per- and Polyfluoroalkyl Substances (PFAS by LCMSMS	EP231X-LL	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is concentrated, combined with an equal volume of reagent water and filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB2438417**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/	Quote number	: ES2024AECOMAU0010
C-O-C number	: 73719	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Biannual SW		
Sampler	: [redacted]		

Dates

Date Samples Received	: 07-Nov-2024 10:30	Issue Date	: 07-Nov-2024
Client Requested Due Date	: 14-Nov-2024	Scheduled Reporting Date	: **14-Nov-2024**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 12.2°C, 14.5°C, 21.6°C - Ice present
Receipt Detail	: ESKY LARGE	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Unless otherwise stated, analytical work for this work order will be conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818.
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP231X PFAS - Full Suite (31 analytes)
EB2438417-001	04-Nov-2024 11:12	0990_QC201_241101	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **EB2438417**	Page	: 1 of 5
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	[redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 07-Nov-2024 10:30
Order number	: 60676801/	Date Analysis Commenced	: 08-Nov-2024
C-O-C number	: 73719	Issue Date	: 14-Nov-2024 15:47
Sampler	: [redacted]		
Site	: Biannual SW		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC201_241101	----	----	----	----
			Sampling date / time	04-Nov-2024 11:12	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2438417-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	----	----	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	----	----	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	----	----	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	----	----	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	----	----	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	----	----	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	----	----	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	----	----	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	----	----	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	----	----	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	----	----	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	----	----	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC201_241101	----	----	----	----
			Sampling date / time	04-Nov-2024 11:12	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2438417-001	--------	--------	--------	--------
				Result	----	----	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	----	----	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	----	----	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	----	----	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	----	----	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	----	----	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	----	----	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	----	----	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	<0.01	----	----	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	<0.01	----	----	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	<0.01	----	----	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**105**	----	----	----	----
13C8-PFOA	----	0.02	%	**108**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	65	140
13C8-PFOA	----	71	133

QUALITY CONTROL REPORT

Work Order	: **EB2438417**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	[redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 07-Nov-2024
Order number	: 60676801/	Date Analysis Commenced	: 08-Nov-2024
C-O-C number	: 73719	Issue Date	: 14-Nov-2024
Sampler	: [redacted]		
Site	: Biannual SW		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6179772)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.2218 µg/L	74.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.2352 µg/L	77.0	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.2373 µg/L	70.6	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.238 µg/L	78.4	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.232 µg/L	72.0	65.0	140
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.241 µg/L	75.3	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6179772)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	73.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	74.2	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	75.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	74.8	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	72.2	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	74.0	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	72.0	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	69.2	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	72.6	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	76.8	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	86.7	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6179772)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	67.8	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	68.8	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	64.3	60.5	138
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	68.5	68.3	134
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	64.9	62.6	138
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	70.2	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	78.0	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6179772)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6179772) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.2343 µg/L	65.3	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.2378 µg/L	71.1	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.24 µg/L	82.3	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.241 µg/L	64.5	64.2	133

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2438417**	Page	: 1 of 4
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 07-Nov-2024
Site	: Biannual SW	Issue Date	: 14-Nov-2024
Sampler	: [redacted]	No. of samples received	: 1
Order number	: 60676801/	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_QC201_241101	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_QC201_241101	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_QC201_241101	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_QC201_241101	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_QC201_241101	**04-Nov-2024**	**12-Nov-2024**	03-May-2025	✓	**12-Nov-2024**	03-May-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	0	16	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2439696**
Amendment : **4**

Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
E-mail	: [redacted]	E-mail	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Facsimile	: ----	Facsimile	: [redacted]
Project	: NT_0990_PFASOMP_24	Page	: 1 of 3
Order number	: 60676801/1.0	Quote number	: EP2023AECOMAU0010 (EN/004/23)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: [redacted]		

Dates

Date Samples Received	: 10-Dec-2024 11:30	Issue Date	: 17-Dec-2024
Client Requested Due Date	: 20-Dec-2024	Scheduled Reporting Date	: **20-Dec-2024**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 19.7'C 20.7'C 13.7'C DRW 20.0'C 19.8'C 18.4'C SYD - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 10 / 8

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- 17/12/24: This is an updated SRN which indicates the new scheduled release date for this work order following the addition of analysis to sample 0990_SW016_241205.
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **17/12/2024: This is an updated SRN reflecting the request to update the project reference code and order number.**
- **17/12/2024: This is an updated SRN reflecting the request to change the sample ID for samples ES2439696-010.**
- **QC Forward analysis will be conducted by NMI.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	(On Hold) WATER No analysis requested	WATER - EP231X PFAS - Full Suite (31 analytes)
ES2439696-001	04-Dec-2024 00:00	0990_SW140_241205		✓
ES2439696-002	04-Dec-2024 00:00	0990_SW049_241205		✓
ES2439696-003	04-Dec-2024 00:00	0990_SW188_241205		✓
ES2439696-004	04-Dec-2024 00:00	0990_SW021_241205		✓
ES2439696-005	04-Dec-2024 00:00	0990_SW350_241205		✓
ES2439696-006	04-Dec-2024 00:00	0990_QC103_241205		✓
ES2439696-007	04-Dec-2024 00:00	0990_QC303_241205		✓
ES2439696-008	04-Dec-2024 00:00	0990_QC403_241205	✓	
ES2439696-009	04-Dec-2024 00:00	0990_QC500_241205	✓	
ES2439696-010	04-Dec-2024 00:00	0990_SW016_241205		✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

[redacted]

CERTIFICATE OF ANALYSIS

Work Order	: **ES2439696**	Page	: 1 of 7
Amendment	: **4**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 10-Dec-2024 11:30
Order number	: 60676801/1.0	Date Analysis Commenced	: 10-Dec-2024
C-O-C number	: ----	Issue Date	: 20-Dec-2024 23:15
Sampler	: [redacted]		
Site	: ----		
Quote number	: EN/004/23		
No. of samples received	: 10		
No. of samples analysed	: 8		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	[redacted]	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP231X - Per- and Polyfluoroalkyl Substances (PFAS): Samples received in 20mL or 125mL bottles have been tested in accordance with the QSM5.4 compliant, NATA accredited method. 60mL or 250mL bottles have been tested to the legacy QSM 5.1 aligned, NATA accredited method.
- Amendment (13/12/2024): This report has been amended and re-released to allow the reporting of an additional sample ID 0990_SW016_241204 previously on hold.
- Amendment (17/12/2024): This report has been amended and re-released to allow the reporting of additional analytical data, specifically method EP231X for sample 0990_SW016_241205.
- Amendment (17/12/2024): This report has been amended as a result of a request to change sample identification numbers (IDs) received from [redacted] on 16/12/2024, for samples ES2439696-010. All analysis results are as per the previous report.
- Amendment (17/12/2024): This report has been amended to alter the project reference code and order number. All analysis results are as per the previous report.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration or as per tables in USEPA 1633 where listed. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS and also conform to QSM 5.4 (US DoD) requirements.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_SW140_241205	0990_SW049_241205	0990_SW188_241205	0990_SW021_241205	0990_SW350_241205
			Sampling date / time	04-Dec-2024 00:00	04-Dec-2024 00:00	04-Dec-2024 00:00	04-Dec-2024 00:00	04-Dec-2024 00:00
Compound	CAS Number	LOR	Unit	ES2439696-001	ES2439696-002	ES2439696-003	ES2439696-004	ES2439696-005
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	**0.05**	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.37**	**0.05**	**0.03**	**0.04**	<0.01
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	**0.05**	<0.02	<0.02	<0.02	<0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**1.37**	**0.52**	**0.32**	**0.22**	**0.01**
Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	**0.11**	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	**0.34**	**0.02**	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	**0.21**	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	**0.43**	<0.01	<0.01	<0.01	<0.01
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	**0.17**	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	**0.05**	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	**0.02**	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	**0.03**	<0.02	<0.02	<0.02	<0.02
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231C: Perfluoroalkyl Sulfonamides								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_SW140_241205	0990_SW049_241205	0990_SW188_241205	0990_SW021_241205	0990_SW350_241205
			Sampling date / time	04-Dec-2024 00:00	04-Dec-2024 00:00	04-Dec-2024 00:00	04-Dec-2024 00:00	04-Dec-2024 00:00
Compound	CAS Number	LOR	Unit	ES2439696-001	ES2439696-002	ES2439696-003	ES2439696-004	ES2439696-005
				Result	Result	Result	Result	Result
EP231C: Perfluoroalkyl Sulfonamides - Continued								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	**0.15**	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	**1.02**	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**4.37**	**0.59**	**0.35**	**0.26**	**0.01**
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**1.74**	**0.57**	**0.35**	**0.26**	**0.01**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**4.00**	**0.59**	**0.35**	**0.26**	**0.01**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**108**	**103**	**112**	**107**	**112**
13C8-PFOA	----	0.02	%	**97.3**	**99.8**	**97.7**	**98.6**	**102**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC103_241205	0990_QC303_241205	0990_SW016_241205	----	----
			Sampling date / time	04-Dec-2024 00:00	04-Dec-2024 00:00	04-Dec-2024 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2439696-006	ES2439696-007	ES2439696-010	--------	--------
				Result	Result	Result	----	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.04**	<0.01	**0.06**	----	----
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	**0.22**	<0.01	**0.40**	----	----
Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	----	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	----	----
Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	<0.02	----	----
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EP231C: Perfluoroalkyl Sulfonamides								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	0990_QC103_241205	0990_QC303_241205	0990_SW016_241205	----	----
			Sampling date / time	04-Dec-2024 00:00	04-Dec-2024 00:00	04-Dec-2024 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2439696-006	ES2439696-007	ES2439696-010	--------	--------
				Result	Result	Result	----	----
EP231C: Perfluoroalkyl Sulfonamides - Continued								
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	<0.02	----	----
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	<0.02	----	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	----	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	----	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	----	----
EP231P: PFAS Sums								
Sum of PFAS	----	0.01	µg/L	**0.26**	<0.01	**0.46**	----	----
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.26**	<0.01	**0.46**	----	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.26**	<0.01	**0.46**	----	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**111**	**117**	**105**	----	----
13C8-PFOA	----	0.02	%	**97.5**	**98.7**	**112**	----	----

Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order	: **ES2439696**	Page	: 1 of 7
Amendment	: **4**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	: [redacted]	Contact	: [redacted]
Address	: [redacted]	Address	: [redacted]
Telephone	: ----	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 10-Dec-2024
Order number	: 60676801/1.0	Date Analysis Commenced	: 10-Dec-2024
C-O-C number	: ----	Issue Date	: 20-Dec-2024
Sampler	: [redacted]		
Site	: ----		
Quote number	: EN/004/23		
No. of samples received	: 10		
No. of samples analysed	: 8		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
[redacted]	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 6248958)									
EB2442174-001	Anonymous	EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 6248958)									
EB2442174-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	0.0	No Limit
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6248958)									
EB2442174-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231C: Perfluoroalkyl Sulfonamides (QC Lot: 6248958) - continued									
EB2442174-001	Anonymous	EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	<0.02	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 6248958)									
EB2442174-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	0.0	No Limit
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	0.0	No Limit
EP231P: PFAS Sums (QC Lot: 6248958)									
EB2442174-001	Anonymous	EP231X: Sum of PFAS	----	0.01	µg/L	<0.01	<0.01	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6248958)								
EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	0.25 µg/L	99.0	70.0	130
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	86.4	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	99.6	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	92.3	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	117	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	108	65.0	140
EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	0.25 µg/L	95.1	70.0	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	94.6	53.0	142
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6266347)								
EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.02	µg/L	<0.02	0.25 µg/L	114	70.0	130
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	96.7	72.0	130
EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02	µg/L	<0.02	0.25 µg/L	108	71.0	127
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	95.4	68.0	131
EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02	µg/L	<0.02	0.25 µg/L	123	69.0	134
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	99.0	65.0	140
EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.02	µg/L	<0.02	0.25 µg/L	104	70.0	130
EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.02	µg/L	<0.02	0.25 µg/L	94.0	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6248958)								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	97.7	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	92.8	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	92.4	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	101	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	102	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	105	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	119	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	120	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	110	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	103	71.0	132
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6266347)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6266347) - continued								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	96.1	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	101	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	98.3	71.0	133
EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.02	µg/L	<0.02	0.25 µg/L	102	69.0	130
EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.02	µg/L	<0.02	0.25 µg/L	102	71.0	129
EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.02	µg/L	<0.02	0.25 µg/L	95.5	69.0	133
EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.02	µg/L	<0.02	0.25 µg/L	104	72.0	134
EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.02	µg/L	<0.02	0.25 µg/L	88.7	65.0	144
EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05	µg/L	<0.05	0.625 µg/L	97.6	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6248958)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	95.5	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	90.2	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	108	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	104	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	106	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	94.8	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	90.3	61.0	135
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6266347)								
EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02	µg/L	<0.02	0.25 µg/L	107	67.0	137
EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05	µg/L	<0.05	0.625 µg/L	96.4	68.0	141
EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05	µg/L	<0.05	0.625 µg/L	109	62.6	147
EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05	µg/L	<0.05	0.625 µg/L	93.0	66.0	145
EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05	µg/L	<0.05	0.625 µg/L	108	57.6	145
EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02	µg/L	<0.02	0.25 µg/L	104	65.0	136
EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02	µg/L	<0.02	0.25 µg/L	101	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6248958)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6248958) - continued								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	82.9	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	103	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	119	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	80.4	71.4	144
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6266347)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	86.4	63.0	143
EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	0.25 µg/L	93.7	64.0	140
EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	0.25 µg/L	90.0	67.0	138
EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	0.25 µg/L	92.8	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 6248958)							
EB2442174-001	Anonymous	EP231X: Perfluoropropane sulfonic acid (PFPrS)	423-41-6	0.25 µg/L	92.1	70.0	130
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	86.9	72.0	130
		EP231X: Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.25 µg/L	90.9	71.0	127
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	91.0	68.0	131
		EP231X: Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.25 µg/L	113	69.0	134
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	99.5	65.0	140
		EP231X: Perfluorononane sulfonic acid (PFNS)	68259-12-1	0.25 µg/L	93.0	70.0	130
		EP231X: Perfluorodecane sulfonic acid (PFDS)	335-77-3	0.25 µg/L	89.6	53.0	142
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6248958)							
EB2442174-001	Anonymous	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	94.6	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	94.1	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	90.9	72.0	129
		EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.25 µg/L	94.9	72.0	130
		EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.25 µg/L	98.2	71.0	133
		EP231X: Perfluorononanoic acid (PFNA)	375-95-1	0.25 µg/L	96.2	69.0	130
		EP231X: Perfluorodecanoic acid (PFDA)	335-76-2	0.25 µg/L	100	71.0	129
		EP231X: Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.25 µg/L	116	69.0	133
		EP231X: Perfluorododecanoic acid (PFDoDA)	307-55-1	0.25 µg/L	117	72.0	134
		EP231X: Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.25 µg/L	111	65.0	144

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 6248958) - continued							
EB2442174-001	Anonymous	EP231X: Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.625 µg/L	111	71.0	132
EP231C: Perfluoroalkyl Sulfonamides (QCLot: 6248958)							
EB2442174-001	Anonymous	EP231X: Perfluorooctane sulfonamide (FOSA)	754-91-6	0.25 µg/L	95.0	67.0	137
		EP231X: N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.625 µg/L	87.0	68.0	141
		EP231X: N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.625 µg/L	88.8	62.6	147
		EP231X: N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.625 µg/L	97.4	66.0	145
		EP231X: N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.625 µg/L	107	57.6	145
		EP231X: N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.25 µg/L	99.9	65.0	136
		EP231X: N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.25 µg/L	82.1	61.0	135
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 6248958)							
EB2442174-001	Anonymous	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	80.5	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	109	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	108	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	78.5	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2439696**	Page	: 1 of 5
Amendment	: **4**		
Client	: **AECOM AUSTRALIA PTY LTD**	Laboratory	: [redacted]
Contact	[redacted]	Telephone	: [redacted]
Project	: NT_0990_PFASOMP_24	Date Samples Received	: 10-Dec-2024
Site	: ----	Issue Date	: 20-Dec-2024
Sampler	: [redacted]	No. of samples received	: 10
Order number	: 60676801/1.0	No. of samples analysed	: 8

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, where applicable to the methodology, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	36	2.78	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	36	2.78	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_SW140_241205, 0990_SW049_241205, 0990_SW188_241205, 0990_SW021_241205, 0990_SW350_241205, 0990_QC103_241205, 0990_QC303_241205	**04-Dec-2024**	**11-Dec-2024**	02-Jun-2025	✓	**12-Dec-2024**	02-Jun-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW016_241205	**04-Dec-2024**	**18-Dec-2024**	02-Jun-2025	✓	**20-Dec-2024**	02-Jun-2025	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) 0990_SW140_241205, 0990_SW049_241205, 0990_SW188_241205, 0990_SW021_241205, 0990_SW350_241205, 0990_QC103_241205, 0990_QC303_241205	**04-Dec-2024**	**11-Dec-2024**	02-Jun-2025	✓	**12-Dec-2024**	02-Jun-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW016_241205	**04-Dec-2024**	**18-Dec-2024**	02-Jun-2025	✓	**20-Dec-2024**	02-Jun-2025	✓
EP231C: Perfluoroalkyl Sulfonamides							
HDPE (no PTFE) (EP231X) 0990_SW140_241205, 0990_SW049_241205, 0990_SW188_241205, 0990_SW021_241205, 0990_SW350_241205, 0990_QC103_241205, 0990_QC303_241205	**04-Dec-2024**	**11-Dec-2024**	02-Jun-2025	✓	**12-Dec-2024**	02-Jun-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW016_241205	**04-Dec-2024**	**18-Dec-2024**	02-Jun-2025	✓	**20-Dec-2024**	02-Jun-2025	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) 0990_SW140_241205, 0990_SW049_241205, 0990_SW188_241205, 0990_SW021_241205, 0990_SW350_241205, 0990_QC103_241205, 0990_QC303_241205	**04-Dec-2024**	**11-Dec-2024**	02-Jun-2025	✓	**12-Dec-2024**	02-Jun-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW016_241205	**04-Dec-2024**	**18-Dec-2024**	02-Jun-2025	✓	**20-Dec-2024**	02-Jun-2025	✓
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) 0990_SW140_241205, 0990_SW049_241205, 0990_SW188_241205, 0990_SW021_241205, 0990_SW350_241205, 0990_QC103_241205, 0990_QC303_241205	**04-Dec-2024**	**11-Dec-2024**	02-Jun-2025	✓	**12-Dec-2024**	02-Jun-2025	✓
HDPE (no PTFE) (EP231X) 0990_SW016_241205	**04-Dec-2024**	**18-Dec-2024**	02-Jun-2025	✓	**20-Dec-2024**	02-Jun-2025	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	36	**2.78**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	36	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	36	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	36	**2.78**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.4, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

Australian Government
Department of Industry, Science and Resources

National Measurement Institute

SAMPLE RECEIPT NOTIFICATION

CUSTOMER DETAILS

Attention: [redacted]

Customer: AECOM SERVICES PTY LTD

Address: [redacted]

Email: [redacted]

Telephone:

LABORATORY DETAILS

Lab: [redacted]

Contact: Client Services

Address: [redacted]

Email: [redacted]

Telephone: [redacted]

SAMPLE DETAILS

NMI Job Name: AECO09/241211/1

Total No. of Samples: 1

LRNs	Estimated Report Date	Customer Sample ID	Lab Sample Description
N24/025572	18-DEC-2024	0990_QC203_241204	WATER 4/12/24

SAMPLE RECEIVED CONDITION

Date samples received:	11-DEC-2024
Sample received in good order:	Yes
NMI Quotation no. provided:	
Client purchase order number:	
Temperature of samples:	Chilled
Comments:	
Mode of Delivery:	

Additional Terms and Conditions

Incomplete / unclear information about samples or required testing will delay the start of the analysis work.

If you require your Purchase Order (PO) number to be included on our invoice, please provide the number during sample submission and before the completion of work to avoid unnecessary delays and/or additional processing/handling fees.

Alterations to Client requirements requested after commencement of testing may incur charges.

The lodgement of an order or receipt of samples for NMI services referenced in this Sample Receipt Notification constitutes an acceptence of the current version of NMI Terms and Conditions or other applicable Terms referenced in the NMI Quotation. NMI Terms and Conditions are available on the web at https://www.industry.gov.au/client-services/testing-and-analysis-services/chemical-and-biological-analysis-services-terms-and-conditions

Australian Government
National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO09/241211/1 **Sample Matrix:** Liquid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		ug/L	ug/L	ug/L	ug/L	%	%	%
PFBA (375-22-4)	NR70	0.05	<0.05	NA	NA	NA	118	NA
PFPeA (2706-90-3)	NR70	0.02	<0.02	NA	NA	NA	111	NA
PFHxA (307-24-4)	NR70	0.01	<0.01	NA	NA	NA	113	NA
PFHpA (375-85-9)	NR70	0.01	<0.01	NA	NA	NA	107	NA
PFOA (335-67-1)	NR70	0.01	<0.01	NA	NA	NA	109	NA
PFNA (375-95-1)	NR70	0.01	<0.01	NA	NA	NA	102	NA
PFDA (335-76-2)	NR70	0.01	<0.01	NA	NA	NA	104	NA
PFUdA (2058-94-8)	NR70	0.01	<0.01	NA	NA	NA	105	NA
PFDoA (307-55-1)	NR70	0.01	<0.01	NA	NA	NA	106	NA
PFTrDA (72629-94-8)	NR70	0.02	<0.02	NA	NA	NA	114	NA
PFTeDA (376-06-7)	NR70	0.02	<0.02	NA	NA	NA	121	NA
PFHxDA (67905-19-5)	NR70	0.02	<0.02	NA	NA	NA	105	NA
PFODA (16517-11-6)	NR70	0.05	<0.05	NA	NA	NA	113	NA
FOUEA (70887-84-2)	NR70	0.01	<0.01	NA	NA	NA	113	NA
PFBS (375-73-5)	NR70	0.01	<0.01	NA	NA	NA	104	NA
PFPeS (2706-91-4)	NR70	0.01	<0.01	NA	NA	NA	100	NA
PFHxS (355-46-4)	NR70	0.01	<0.01	NA	NA	NA	102	NA
PFHpS (375-92-8)	NR70	0.01	<0.01	NA	NA	NA	104	NA
PFOS (1763-23-1)	NR70	0.02	<0.02	NA	NA	NA	99	NA
PFNS (68259-12-1)	NR70	0.01	<0.01	NA	NA	NA	107	NA
PFDS (335-77-3)	NR70	0.01	<0.01	NA	NA	NA	102	NA
PFOSA (754-91-6)	NR70	0.01	<0.01	NA	NA	NA	104	NA
N-MeFOSA (31506-32-8)	NR70	0.02	<0.02	NA	NA	NA	102	NA
N-EtFOSA (4151-50-2)	NR70	0.02	<0.02	NA	NA	NA	110	NA
N-MeFOSAA (2355-31-9)	NR70	0.01	<0.01	NA	NA	NA	99	NA
N-EtFOSAA(2991-50-6)	NR70	0.01	<0.01	NA	NA	NA	106	NA
N-MeFOSE (24448-09-7)	NR70	0.05	<0.05	NA	NA	NA	122	NA
N-EtFOSE (1691-99-2)	NR70	0.05	<0.05	NA	NA	NA	108	NA
4:2 FTS (757124-72-4)	NR70	0.01	<0.01	NA	NA	NA	114	NA
6:2 FTS (27619-97-2)	NR70	0.01	<0.01	NA	NA	NA	115	NA
8:2 FTS (39108-34-4)	NR70	0.01	<0.01	NA	NA	NA	113	NA
10:2 FTS (120226-60-0)	NR70	0.01	<0.01	NA	NA	NA	107	NA
8:2 diPAP (678-41-1)	NR70	0.02	<0.02	NA	NA	NA	97	NA

Results expressed in percentage (%) or ug/L wherever appropriate.
Acceptable Spike recovery is 50-150%.
Maximum acceptable RPDs on spikes and duplicates is 40%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference.

Signed: [redacted]

Date: [redacted]

Australian Government
Department of Industry, Science and Resources

National Measurement Institute

NATA

REPORT OF ANALYSIS

Report No. RN1450878

Client	: AECOM SERVICES PTY LTD	**Job No.**	: AECO09/241211/1
	[redacted]	**Quote No.**	: QT-02294
		Order No.	: 704
		Date Received	: 11-DEC-2024
Attention	:	**Sampled By**	: CLIENT
Project Name	: NT_0990_PFASOMP_24		
Your Client Services Manager	: [redacted]	**Phone**	: [redacted]

Lab Reg No.	Sample Ref	Sample Description
N24/025572	0990_QC203_241204	WATER 4/12/24

Lab Reg No.	Units	N24/025572				Method
Date Sampled		04-DEC-2024				
Sample Reference		0990_QC203_2				
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	ug/L	<0.05				NR70
PFPeA (2706-90-3)	ug/L	<0.02				NR70
PFHxA (307-24-4)	ug/L	<0.01				NR70
PFHpA (375-85-9)	ug/L	<0.01				NR70
PFOA (335-67-1)	ug/L	<0.01				NR70
PFNA (375-95-1)	ug/L	<0.01				NR70
PFDA (335-76-2)	ug/L	<0.01				NR70
PFUdA (2058-94-8)	ug/L	<0.01				NR70
PFDoA (307-55-1)	ug/L	<0.01				NR70
PFTrDA (72629-94-8)	ug/L	<0.02				NR70
PFTeDA (376-06-7)	ug/L	<0.02				NR70
PFHxDA (67905-19-5)	ug/L	<0.02				NR70
PFODA (16517-11-6)	ug/L	<0.05				NR70
FOUEA (70887-84-2)	ug/L	<0.01				NR70
PFDS (335-77-3)	ug/L	<0.01				NR70
PFPeS (2706-91-4)	ug/L	<0.01				NR70
PFHxS (355-46-4)	ug/L	0.049				NR70
PFHpS (375-92-8)	ug/L	<0.01				NR70
PFOS (1763-23-1)	ug/L	0.27				NR70
PFNS (68259-12-1)	ug/L	<0.01				NR70
PFBS (375-73-5)	ug/L	0.011				NR70
PFOSA (754-91-6)	ug/L	<0.01				NR70
N-MeFOSA (31506-32-8)	ug/L	<0.02				NR70
N-EtFOSA (4151-50-2)	ug/L	<0.02				NR70
N-MeFOSAA (2355-31-9)	ug/L	<0.01				NR70
N-EtFOSAA(2991-50-6)	ug/L	<0.01				NR70
N-MeFOSE (24448-09-7)	ug/L	<0.05				NR70
N-EtFOSE (1691-99-2)	ug/L	<0.05				NR70
4:2 FTS (757124-72-4)	ug/L	<0.01				NR70
6:2 FTS (27619-97-2)	ug/L	<0.01				NR70

REPORT OF ANALYSIS

Report No. RN1450878

Lab Reg No.		N24/025572				
Date Sampled		04-DEC-2024				
Sample Reference		0990_QC203_2				
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
8:2 FTS (39108-34-4)	ug/L	<0.01				NR70
10:2 FTS (120226-60-0)	ug/L	<0.01				NR70
8:2 diPAP (678-41-1)	ug/L	<0.02				NR70
PFBA (Surrogate Recovery)	%	87				NR70
PFPeA (Surrogate Recovery)	%	95				NR70
PFHxA (Surrogate Recovery)	%	87				NR70
PFHpA (Surrogate Recovery)	%	86				NR70
PFOA (Surrogate Recovery)	%	78				NR70
PFNA (Surrogate Recovery)	%	75				NR70
PFDA (Surrogate Recovery)	%	69				NR70
PFUdA (Surrogate Recovery)	%	53				NR70
PFDoA (Surrogate Recovery)	%	44				NR70
PFTeDA (Surrogate Recovery)	%	47				NR70
PFHxDA (Surrogate Recovery)	%	61				NR70
FOUEA (Surrogate Recovery)	%	50				NR70
PFBS (Surrogate Recovery)	%	84				NR70
PFHxS (Surrogate Recovery)	%	86				NR70
PFOS (Surrogate Recovery)	%	77				NR70
PFOSA (Surrogate Recovery)	%	37				NR70
N-MeFOSA (Surrogate Recovery)	%	30				NR70
N-EtFOSA (Surrogate Recovery)	%	24				NR70
N-MeFOSAA (Surrogate Recovery)	%	31				NR70
N-EtFOSAA (Surrogate Recovery)	%	27				NR70
N-MeFOSE (Surrogate Recovery)	%	28				NR70
N-EtFOSE (Surrogate Recovery)	%	26				NR70
4:2 FTS (Surrogate Recovery)	%	91				NR70
6:2 FTS (Surrogate Recovery)	%	77				NR70
8:2 FTS (Surrogate Recovery)	%	56				NR70
8:2 diPAP (Surrogate Recovery)	%	71				NR70
Dates						
Date extracted		17-DEC-2024				
Date analysed		17-DEC-2024				

N24/025572
PFOS and PFHxS are quantified using a combined branched and linear standard,
linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.

Selected PFAS surrogate recoveries are biased due to matrix effects.ô

REPORT OF ANALYSIS

Surrogate recoveries low for selected analytes - PFAS LORs not raised since S/N >10.

[redacted]

Accreditation No. [redacted]

18-DEC-2024

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

* Denotes the analyte or test method is not within our ISO/IEC 17025 scope of accreditation.

Measurement Uncertainty is available upon request.

Note: Sampling date(s) have been provided by the client.
The testing was undertaken at: 105 Delhi Road, North Ryde, NSW, 2113

Australian Government
Department of Industry, Science and Resources

National Measurement Institute

SAMPLE RECEIPT NOTIFICATION

CUSTOMER DETAILS

Attention: [redacted]

Customer: AECOM SERVICES PTY LTD

Address: [redacted]

Email: [redacted]

Telephone:

LABORATORY DETAILS

Lab: National Measurement Institute

Contact: Client Services

Address: 105 Delhi Road, North Ryde, NSW
NSW 2113

Email: [redacted]

Telephone: [redacted]

SAMPLE DETAILS

NMI Job Name: **AECO09/250123/2**

Total No. of Samples: **3**

LRNs	Estimated Report Date	Customer Sample ID	Lab Sample Description
N25/001001	31-JAN-2025	0990_QC200_250113	WATER 13/01/2025
N25/001002	31-JAN-2025	0990_QC201_250114	WATER 14/01/2025

SAMPLE RECEIVED CONDITION

Date samples received:	23-JAN-2025
Sample received in good order:	Yes
NMI Quotation no. provided:	
Client purchase order number:	60676801/7_03_01
Temperature of samples:	Chilled
Comments:	
Mode of Delivery:	

Additional Terms and Conditions

Incomplete / unclear information about samples or required testing will delay the start of the analysis work.

If you require your Purchase Order (PO) number to be included on our invoice, please provide the number during sample submission and before the completion of work to avoid unnecessary delays and/or additional processing/handling fees.

Alterations to Client requirements requested after commencement of testing may incur charges.

The lodgement of an order or receipt of samples for NMI services referenced in this Sample Receipt Notification constitutes an acceptence of the current version of NMI Terms and Conditions or other applicable Terms referenced in the NMI Quotation. NMI Terms and Conditions are available on the web at https://www.industry.gov.au/client-services/testing-and-analysis-services/chemical-and-biological-analysis-services-terms-and-conditions

Australian Government
National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO09/250123/2 **Sample Matrix:** Liquid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		ug/L	ug/L	ug/L	ug/L	%	%	%
PFBA (375-22-4)	NR70	0.05	<0.05	NA	NA	NA	122	NA
PFPeA (2706-90-3)	NR70	0.02	<0.02	NA	NA	NA	119	NA
PFHxA (307-24-4)	NR70	0.01	<0.01	NA	NA	NA	119	NA
PFHpA (375-85-9)	NR70	0.01	<0.01	NA	NA	NA	119	NA
PFOA (335-67-1)	NR70	0.01	<0.01	NA	NA	NA	114	NA
PFNA (375-95-1)	NR70	0.01	<0.01	NA	NA	NA	106	NA
PFDA (335-76-2)	NR70	0.01	<0.01	NA	NA	NA	113	NA
PFUdA (2058-94-8)	NR70	0.01	<0.01	NA	NA	NA	120	NA
PFDoA (307-55-1)	NR70	0.01	<0.01	NA	NA	NA	116	NA
PFTrDA (72629-94-8)	NR70	0.02	<0.02	NA	NA	NA	113	NA
PFTeDA (376-06-7)	NR70	0.02	<0.02	NA	NA	NA	144	NA
PFHxDA (67905-19-5)	NR70	0.02	<0.02	NA	NA	NA	119	NA
PFODA (16517-11-6)	NR70	0.05	<0.05	NA	NA	NA	116	NA
FOUEA (70887-84-2)	NR70	0.01	<0.01	NA	NA	NA	115	NA
PFBS (375-73-5)	NR70	0.01	<0.01	NA	NA	NA	120	NA
PFPeS (2706-91-4)	NR70	0.01	<0.01	NA	NA	NA	111	NA
PFHxS (355-46-4)	NR70	0.01	<0.01	NA	NA	NA	114	NA
PFHpS (375-92-8)	NR70	0.01	<0.01	NA	NA	NA	105	NA
PFOS (1763-23-1)	NR70	0.02	<0.02	NA	NA	NA	107	NA
PFNS (68259-12-1)	NR70	0.01	<0.01	NA	NA	NA	113	NA
PFDS (335-77-3)	NR70	0.01	<0.01	NA	NA	NA	114	NA
PFOSA (754-91-6)	NR70	0.01	<0.01	NA	NA	NA	112	NA
N-MeFOSA (31506-32-8)	NR70	0.02	<0.02	NA	NA	NA	126	NA
N-EtFOSA (4151-50-2)	NR70	0.02	<0.02	NA	NA	NA	105	NA
N-MeFOSAA (2355-31-9)	NR70	0.01	<0.01	NA	NA	NA	127	NA
N-EtFOSAA(2991-50-6)	NR70	0.01	<0.01	NA	NA	NA	107	NA
N-MeFOSE (24448-09-7)	NR70	0.05	<0.05	NA	NA	NA	98	NA
N-EtFOSE (1691-99-2)	NR70	0.05	<0.05	NA	NA	NA	140	NA
4:2 FTS (757124-72-4)	NR70	0.01	<0.01	NA	NA	NA	115	NA
6:2 FTS (27619-97-2)	NR70	0.01	<0.01	NA	NA	NA	136	NA
8:2 FTS (39108-34-4)	NR70	0.01	<0.01	NA	NA	NA	122	NA
10:2 FTS (120226-60-0)	NR70	0.01	<0.01	NA	NA	NA	110	NA
8:2 diPAP (678-41-1)	NR70	0.02	<0.02	NA	NA	NA	113	NA

Results expressed in percentage (%) or ug/L wherever appropriate.
Acceptable Spike recovery is 50-150%.
Maximum acceptable RPDs on spikes and duplicates is 40%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference.

Signed: [redacted]

Date: 31/01/2025

Australian Government
Department of Industry, Science and Resources

National Measurement Institute

NATA

REPORT OF ANALYSIS

Report No. RN1454300

Client	: AECOM SERVICES PTY LTD	**Job No.**	: AECO09/250123/2
	[redacted]	**Quote No.**	: QT-02294
		Order No.	: 60676801/7_03_01
		Date Received	: 23-JAN-2025
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: NT_0990_PFASOMP_25		
For Follow up enquiries	: [redacted]	**Phone**	: 1300 722 845

Lab Reg No.	Sample Ref	Sample Description
N25/001001	0990_QC200_250113	WATER 13/01/2025
N25/001002	0990_QC201_250114	WATER 14/01/2025
N25/001003	0990_QC202_250114	WATER 14/01/2025

Lab Reg No.		N25/001001	N25/001002	N25/001003		
Date Sampled		13-JAN-2025	14-JAN-2025	14-JAN-2025		
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	ug/L	<0.05	<0.05	<0.05		NR70
PFPeA (2706-90-3)	ug/L	<0.02	<0.02	<0.02		NR70
PFHxA (307-24-4)	ug/L	<0.01	<0.01	<0.01		NR70
PFHpA (375-85-9)	ug/L	<0.01	<0.01	<0.01		NR70
PFOA (335-67-1)	ug/L	<0.01	<0.01	<0.01		NR70
PFNA (375-95-1)	ug/L	<0.01	<0.01	<0.01		NR70
PFDA (335-76-2)	ug/L	<0.01	<0.01	<0.01		NR70
PFUdA (2058-94-8)	ug/L	<0.01	<0.01	<0.01		NR70
PFDoA (307-55-1)	ug/L	<0.01	<0.01	<0.01		NR70
PFTrDA (72629-94-8)	ug/L	<0.02	<0.02	<0.02		NR70
PFTeDA (376-06-7)	ug/L	<0.02	<0.02	<0.02		NR70
PFHxDA (67905-19-5)	ug/L	<0.02	<0.02	<0.02		NR70
PFODA (16517-11-6)	ug/L	<0.05	<0.05	<0.05		NR70
FOUEA (70887-84-2)	ug/L	<0.01	<0.01	<0.01		NR70
PFDS (335-77-3)	ug/L	<0.01	<0.01	<0.01		NR70
PFPeS (2706-91-4)	ug/L	<0.01	<0.01	<0.01		NR70
PFHxS (355-46-4)	ug/L	<0.01	<0.01	<0.01		NR70
PFHpS (375-92-8)	ug/L	<0.01	<0.01	<0.01		NR70
PFOS (1763-23-1)	ug/L	<0.02	<0.02	<0.02		NR70
PFNS (68259-12-1)	ug/L	<0.01	<0.01	<0.01		NR70
PFBS (375-73-5)	ug/L	<0.01	<0.01	<0.01		NR70
PFOSA (754-91-6)	ug/L	<0.01	<0.01	<0.01		NR70
N-MeFOSA (31506-32-8)	ug/L	<0.02	<0.02	<0.02		NR70
N-EtFOSA (4151-50-2)	ug/L	<0.02	<0.02	<0.02		NR70
N-MeFOSAA (2355-31-9)	ug/L	<0.01	<0.01	<0.01		NR70
N-EtFOSAA(2991-50-6)	ug/L	<0.01	<0.01	<0.01		NR70
N-MeFOSE (24448-09-7)	ug/L	<0.05	<0.05	<0.05		NR70
N-EtFOSE (1691-99-2)	ug/L	<0.05	<0.05	<0.05		NR70

REPORT OF ANALYSIS

Report No. RN1454300

Lab Reg No.		N25/001001	N25/001002	N25/001003		
Date Sampled		13-JAN-2025	14-JAN-2025	14-JAN-2025		
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
4:2 FTS (757124-72-4)	ug/L	<0.01	<0.01	<0.01		NR70
6:2 FTS (27619-97-2)	ug/L	<0.01	<0.01	<0.01		NR70
8:2 FTS (39108-34-4)	ug/L	<0.01	<0.01	<0.01		NR70
10:2 FTS (120226-60-0)	ug/L	<0.01	<0.01	<0.01		NR70
8:2 diPAP (678-41-1)	ug/L	<0.02	<0.02	<0.02		NR70
PFBA (Surrogate Recovery)	%	92	88	87		NR70
PFPeA (Surrogate Recovery)	%	98	89	89		NR70
PFHxA (Surrogate Recovery)	%	100	107	96		NR70
PFHpA (Surrogate Recovery)	%	100	105	100		NR70
PFOA (Surrogate Recovery)	%	95	91	92		NR70
PFNA (Surrogate Recovery)	%	84	82	81		NR70
PFDA (Surrogate Recovery)	%	93	91	85		NR70
PFUdA (Surrogate Recovery)	%	98	94	82		NR70
PFDoA (Surrogate Recovery)	%	87	88	83		NR70
PFTeDA (Surrogate Recovery)	%	62	67	64		NR70
PFHxDA (Surrogate Recovery)	%	89	88	81		NR70
FOUEA (Surrogate Recovery)	%	90	83	83		NR70
PFBS (Surrogate Recovery)	%	110	114	110		NR70
PFHxS (Surrogate Recovery)	%	96	107	99		NR70
PFOS (Surrogate Recovery)	%	91	103	94		NR70
PFOSA (Surrogate Recovery)	%	76	78	74		NR70
N-MeFOSA (Surrogate Recovery)	%	84	85	72		NR70
N-EtFOSA (Surrogate Recovery)	%	89	89	74		NR70
N-MeFOSAA (Surrogate Recovery)	%	77	67	70		NR70
N-EtFOSAA (Surrogate Recovery)	%	81	70	82		NR70
N-MeFOSE (Surrogate Recovery)	%	93	96	86		NR70
N-EtFOSE (Surrogate Recovery)	%	82	80	72		NR70
4:2 FTS (Surrogate Recovery)	%	90	96	84		NR70
6:2 FTS (Surrogate Recovery)	%	89	81	85		NR70
8:2 FTS (Surrogate Recovery)	%	71	69	67		NR70
8:2 diPAP (Surrogate Recovery)	%	70	65	77		NR70
Dates						
Date extracted		29-JAN-2025	29-JAN-2025	29-JAN-2025		
Date analysed		30-JAN-2025	30-JAN-2025	30-JAN-2025		

N25/001001

****

N25/001003

REPORT OF ANALYSIS

PFOS and PFHxS are quantified using a combined branched and linear standard,
linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.

[redacted]

Accreditation No. [redacted]

31-JAN-2025

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

Measurement Uncertainty is available upon request.

Note: Sampling date(s) have been provided by the client.
The testing was undertaken at: 105 Delhi Road, North Ryde, NSW, 2113

Australian Government
Department of Industry, Science and Resources

National Measurement Institute

NATA

REPORT OF ANALYSIS

Report No. RN1451184

Client	: AECOM SERVICES PTY LTD LEVEL 3 / 9 CAVENAGH STREET DARWIN NT 800	**Job No.**	: AECO09/241213/1
		Quote No.	: QT-02294
		Order No.	: 60676801_7_03_01
		Date Received	: 13-DEC-2024
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: NT_0990_PFASOMP_24		
Your Client Services Manager	: [redacted]	**Phone**	: 03 9644 4854

Lab Reg No.	Sample Ref	Sample Description
N24/025947	0990_QC200_241209	WATER 09/12/2024
N24/025948	0990_QC201_241211	WATER 11/12/2024

Lab Reg No.		N24/025947	N24/025948			
Date Sampled		09-DEC-2024	11-DEC-2024			
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	ug/L	<0.05	<0.05			NR70
PFPeA (2706-90-3)	ug/L	<0.02	<0.02			NR70
PFHxA (307-24-4)	ug/L	<0.01	<0.01			NR70
PFHpA (375-85-9)	ug/L	<0.01	<0.01			NR70
PFOA (335-67-1)	ug/L	<0.01	<0.01			NR70
PFNA (375-95-1)	ug/L	<0.01	<0.01			NR70
PFDA (335-76-2)	ug/L	<0.01	<0.01			NR70
PFUdA (2058-94-8)	ug/L	<0.01	<0.01			NR70
PFDoA (307-55-1)	ug/L	<0.01	<0.01			NR70
PFTrDA (72629-94-8)	ug/L	<0.02	<0.02			NR70
PFTeDA (376-06-7)	ug/L	<0.02	<0.02			NR70
PFHxDA (67905-19-5)	ug/L	<0.02	<0.02			NR70
PFODA (16517-11-6)	ug/L	<0.05	<0.05			NR70
FOUEA (70887-84-2)	ug/L	<0.01	<0.01			NR70
PFDS (335-77-3)	ug/L	<0.01	<0.01			NR70
PFPeS (2706-91-4)	ug/L	<0.01	<0.01			NR70
PFHxS (355-46-4)	ug/L	<0.01	<0.01			NR70
PFHpS (375-92-8)	ug/L	<0.01	<0.01			NR70
PFOS (1763-23-1)	ug/L	<0.02	<0.02			NR70
PFNS (68259-12-1)	ug/L	<0.01	<0.01			NR70
PFBS (375-73-5)	ug/L	<0.01	<0.01			NR70
PFOSA (754-91-6)	ug/L	<0.01	<0.01			NR70
N-MeFOSA (31506-32-8)	ug/L	<0.02	<0.02			NR70
N-EtFOSA (4151-50-2)	ug/L	<0.02	<0.02			NR70
N-MeFOSAA (2355-31-9)	ug/L	<0.01	<0.01			NR70
N-EtFOSAA(2991-50-6)	ug/L	<0.01	<0.01			NR70
N-MeFOSE (24448-09-7)	ug/L	<0.05	<0.05			NR70
N-EtFOSE (1691-99-2)	ug/L	<0.05	<0.05			NR70
4:2 FTS (757124-72-4)	ug/L	<0.01	<0.01			NR70

REPORT OF ANALYSIS

Report No. RN1451184

Lab Reg No.		N24/025947	N24/025948			
Date Sampled		09-DEC-2024	11-DEC-2024			
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
6:2 FTS (27619-97-2)	ug/L	<0.01	<0.01			NR70
8:2 FTS (39108-34-4)	ug/L	<0.01	<0.01			NR70
10:2 FTS (120226-60-0)	ug/L	<0.01	<0.01			NR70
8:2 diPAP (678-41-1)	ug/L	<0.02	<0.02			NR70
PFBA (Surrogate Recovery)	%	83	78			NR70
PFPeA (Surrogate Recovery)	%	84	87			NR70
PFHxA (Surrogate Recovery)	%	88	84			NR70
PFHpA (Surrogate Recovery)	%	90	82			NR70
PFOA (Surrogate Recovery)	%	84	85			NR70
PFNA (Surrogate Recovery)	%	82	76			NR70
PFDA (Surrogate Recovery)	%	87	76			NR70
PFUdA (Surrogate Recovery)	%	85	72			NR70
PFDoA (Surrogate Recovery)	%	84	61			NR70
PFTeDA (Surrogate Recovery)	%	64	46			NR70
PFHxDA (Surrogate Recovery)	%	70	69			NR70
FOUEA (Surrogate Recovery)	%	58	71			NR70
PFBS (Surrogate Recovery)	%	96	91			NR70
PFHxS (Surrogate Recovery)	%	98	87			NR70
PFOS (Surrogate Recovery)	%	90	78			NR70
PFOSA (Surrogate Recovery)	%	78	63			NR70
N-MeFOSA (Surrogate Recovery)	%	70	59			NR70
N-EtFOSA (Surrogate Recovery)	%	72	60			NR70
N-MeFOSAA (Surrogate Recovery)	%	71	68			NR70
N-EtFOSAA (Surrogate Recovery)	%	73	68			NR70
N-MeFOSE (Surrogate Recovery)	%	82	68			NR70
N-EtFOSE (Surrogate Recovery)	%	79	64			NR70
4:2 FTS (Surrogate Recovery)	%	78	64			NR70
6:2 FTS (Surrogate Recovery)	%	71	64			NR70
8:2 FTS (Surrogate Recovery)	%	75	61			NR70
8:2 diPAP (Surrogate Recovery)	%	69	56			NR70
Dates						
Date extracted		18-DEC-2024	18-DEC-2024			
Date analysed		18-DEC-2024	18-DEC-2024			

N24/025947
to
N24/025948

PFOS and PFHxS are quantified using a combined branched and linear standard,

REPORT OF ANALYSIS

linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.

Selected PFAS surrogate recoveries are biased due to matrix effects.ô
Surrogate recoveries low for selected analytes - PFAS LORs not raised since S/N >10.

[redacted], Analyst
Organics - NSW
Accreditation No. 198

20-DEC-2024

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

Measurement Uncertainty is available upon request.

Note: Sampling date(s) have been provided by the client.
The testing was undertaken at: 105 Delhi Road, North Ryde, NSW, 2113

Australian Government
National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO09/250123/2 **Sample Matrix:** Liquid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		ug/L	ug/L	ug/L	ug/L	%	%	%
PFBA (375-22-4)	NR70	0.05	<0.05	NA	NA	NA	122	NA
PFPeA (2706-90-3)	NR70	0.02	<0.02	NA	NA	NA	119	NA
PFHxA (307-24-4)	NR70	0.01	<0.01	NA	NA	NA	119	NA
PFHpA (375-85-9)	NR70	0.01	<0.01	NA	NA	NA	119	NA
PFOA (335-67-1)	NR70	0.01	<0.01	NA	NA	NA	114	NA
PFNA (375-95-1)	NR70	0.01	<0.01	NA	NA	NA	106	NA
PFDA (335-76-2)	NR70	0.01	<0.01	NA	NA	NA	113	NA
PFUdA (2058-94-8)	NR70	0.01	<0.01	NA	NA	NA	120	NA
PFDoA (307-55-1)	NR70	0.01	<0.01	NA	NA	NA	116	NA
PFTrDA (72629-94-8)	NR70	0.02	<0.02	NA	NA	NA	113	NA
PFTeDA (376-06-7)	NR70	0.02	<0.02	NA	NA	NA	144	NA
PFHxDA (67905-19-5)	NR70	0.02	<0.02	NA	NA	NA	119	NA
PFODA (16517-11-6)	NR70	0.05	<0.05	NA	NA	NA	116	NA
FOUEA (70887-84-2)	NR70	0.01	<0.01	NA	NA	NA	115	NA
PFBS (375-73-5)	NR70	0.01	<0.01	NA	NA	NA	120	NA
PFPeS (2706-91-4)	NR70	0.01	<0.01	NA	NA	NA	111	NA
PFHxS (355-46-4)	NR70	0.01	<0.01	NA	NA	NA	114	NA
PFHpS (375-92-8)	NR70	0.01	<0.01	NA	NA	NA	105	NA
PFOS (1763-23-1)	NR70	0.02	<0.02	NA	NA	NA	107	NA
PFNS (68259-12-1)	NR70	0.01	<0.01	NA	NA	NA	113	NA
PFDS (335-77-3)	NR70	0.01	<0.01	NA	NA	NA	114	NA
PFOSA (754-91-6)	NR70	0.01	<0.01	NA	NA	NA	112	NA
N-MeFOSA (31506-32-8)	NR70	0.02	<0.02	NA	NA	NA	126	NA
N-EtFOSA (4151-50-2)	NR70	0.02	<0.02	NA	NA	NA	105	NA
N-MeFOSAA (2355-31-9)	NR70	0.01	<0.01	NA	NA	NA	127	NA
N-EtFOSAA(2991-50-6)	NR70	0.01	<0.01	NA	NA	NA	107	NA
N-MeFOSE (24448-09-7)	NR70	0.05	<0.05	NA	NA	NA	98	NA
N-EtFOSE (1691-99-2)	NR70	0.05	<0.05	NA	NA	NA	140	NA
4:2 FTS (757124-72-4)	NR70	0.01	<0.01	NA	NA	NA	115	NA
6:2 FTS (27619-97-2)	NR70	0.01	<0.01	NA	NA	NA	136	NA
8:2 FTS (39108-34-4)	NR70	0.01	<0.01	NA	NA	NA	122	NA
10:2 FTS (120226-60-0)	NR70	0.01	<0.01	NA	NA	NA	110	NA
8:2 diPAP (678-41-1)	NR70	0.02	<0.02	NA	NA	NA	113	NA

Results expressed in percentage (%) or ug/L wherever appropriate.
Acceptable Spike recovery is 50-150%.
Maximum acceptable RPDs on spikes and duplicates is 40%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference.

Signed: [redacted]
Organics Manager, NMI-North Ryde

Date: **31/01/2025**

Australian Government
Department of Industry, Science and Resources

National Measurement Institute

NATA

REPORT OF ANALYSIS

Report No. RN1454300

Client	: AECOM SERVICES PTY LTD LEVEL 3 / 9 CAVENAGH STREET DARWIN NT 800	**Job No.**	: AECO09/250123/2
		Quote No.	: QT-02294
		Order No.	: 60676801/7_03_01
		Date Received	: 23-JAN-2025
Attention	: [redacted]	**Sampled By**	: CLIENT
Project Name	: NT_0990_PFASOMP_25		
For Follow up enquiries	: ASB@measurement.gov.au	**Phone**	: 1300 722 845

Lab Reg No.	Sample Ref	Sample Description
N25/001001	0990_QC200_250113	WATER 13/01/2025
N25/001002	0990_QC201_250114	WATER 14/01/2025
N25/001003	0990_QC202_250114	WATER 14/01/2025

Lab Reg No.		N25/001001	N25/001002	N25/001003		
Date Sampled		13-JAN-2025	14-JAN-2025	14-JAN-2025		
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
PFBA (375-22-4)	ug/L	<0.05	<0.05	<0.05		NR70
PFPeA (2706-90-3)	ug/L	<0.02	<0.02	<0.02		NR70
PFHxA (307-24-4)	ug/L	<0.01	<0.01	<0.01		NR70
PFHpA (375-85-9)	ug/L	<0.01	<0.01	<0.01		NR70
PFOA (335-67-1)	ug/L	<0.01	<0.01	<0.01		NR70
PFNA (375-95-1)	ug/L	<0.01	<0.01	<0.01		NR70
PFDA (335-76-2)	ug/L	<0.01	<0.01	<0.01		NR70
PFUdA (2058-94-8)	ug/L	<0.01	<0.01	<0.01		NR70
PFDoA (307-55-1)	ug/L	<0.01	<0.01	<0.01		NR70
PFTrDA (72629-94-8)	ug/L	<0.02	<0.02	<0.02		NR70
PFTeDA (376-06-7)	ug/L	<0.02	<0.02	<0.02		NR70
PFHxDA (67905-19-5)	ug/L	<0.02	<0.02	<0.02		NR70
PFODA (16517-11-6)	ug/L	<0.05	<0.05	<0.05		NR70
FOUEA (70887-84-2)	ug/L	<0.01	<0.01	<0.01		NR70
PFDS (335-77-3)	ug/L	<0.01	<0.01	<0.01		NR70
PFPeS (2706-91-4)	ug/L	<0.01	<0.01	<0.01		NR70
PFHxS (355-46-4)	ug/L	<0.01	<0.01	<0.01		NR70
PFHpS (375-92-8)	ug/L	<0.01	<0.01	<0.01		NR70
PFOS (1763-23-1)	ug/L	<0.02	<0.02	<0.02		NR70
PFNS (68259-12-1)	ug/L	<0.01	<0.01	<0.01		NR70
PFBS (375-73-5)	ug/L	<0.01	<0.01	<0.01		NR70
PFOSA (754-91-6)	ug/L	<0.01	<0.01	<0.01		NR70
N-MeFOSA (31506-32-8)	ug/L	<0.02	<0.02	<0.02		NR70
N-EtFOSA (4151-50-2)	ug/L	<0.02	<0.02	<0.02		NR70
N-MeFOSAA (2355-31-9)	ug/L	<0.01	<0.01	<0.01		NR70
N-EtFOSAA(2991-50-6)	ug/L	<0.01	<0.01	<0.01		NR70
N-MeFOSE (24448-09-7)	ug/L	<0.05	<0.05	<0.05		NR70
N-EtFOSE (1691-99-2)	ug/L	<0.05	<0.05	<0.05		NR70

REPORT OF ANALYSIS

Report No. RN1454300

Lab Reg No.		N25/001001	N25/001002	N25/001003		
Date Sampled		13-JAN-2025	14-JAN-2025	14-JAN-2025		
	Units					Method
PFAS (per-and poly-fluoroalkyl substances)						
4:2 FTS (757124-72-4)	ug/L	<0.01	<0.01	<0.01		NR70
6:2 FTS (27619-97-2)	ug/L	<0.01	<0.01	<0.01		NR70
8:2 FTS (39108-34-4)	ug/L	<0.01	<0.01	<0.01		NR70
10:2 FTS (120226-60-0)	ug/L	<0.01	<0.01	<0.01		NR70
8:2 diPAP (678-41-1)	ug/L	<0.02	<0.02	<0.02		NR70
PFBA (Surrogate Recovery)	%	92	88	87		NR70
PFPeA (Surrogate Recovery)	%	98	89	89		NR70
PFHxA (Surrogate Recovery)	%	100	107	96		NR70
PFHpA (Surrogate Recovery)	%	100	105	100		NR70
PFOA (Surrogate Recovery)	%	95	91	92		NR70
PFNA (Surrogate Recovery)	%	84	82	81		NR70
PFDA (Surrogate Recovery)	%	93	91	85		NR70
PFUdA (Surrogate Recovery)	%	98	94	82		NR70
PFDoA (Surrogate Recovery)	%	87	88	83		NR70
PFTeDA (Surrogate Recovery)	%	62	67	64		NR70
PFHxDA (Surrogate Recovery)	%	89	88	81		NR70
FOUEA (Surrogate Recovery)	%	90	83	83		NR70
PFBS (Surrogate Recovery)	%	110	114	110		NR70
PFHxS (Surrogate Recovery)	%	96	107	99		NR70
PFOS (Surrogate Recovery)	%	91	103	94		NR70
PFOSA (Surrogate Recovery)	%	76	78	74		NR70
N-MeFOSA (Surrogate Recovery)	%	84	85	72		NR70
N-EtFOSA (Surrogate Recovery)	%	89	89	74		NR70
N-MeFOSAA (Surrogate Recovery)	%	77	67	70		NR70
N-EtFOSAA (Surrogate Recovery)	%	81	70	82		NR70
N-MeFOSE (Surrogate Recovery)	%	93	96	86		NR70
N-EtFOSE (Surrogate Recovery)	%	82	80	72		NR70
4:2 FTS (Surrogate Recovery)	%	90	96	84		NR70
6:2 FTS (Surrogate Recovery)	%	89	81	85		NR70
8:2 FTS (Surrogate Recovery)	%	71	69	67		NR70
8:2 diPAP (Surrogate Recovery)	%	70	65	77		NR70
Dates						
Date extracted		29-JAN-2025	29-JAN-2025	29-JAN-2025		
Date analysed		30-JAN-2025	30-JAN-2025	30-JAN-2025		

N25/001001

****

N25/001003

REPORT OF ANALYSIS

PFOS and PFHxS are quantified using a combined branched and linear standard,
linear and branched isomers are totalled for reporting.
All results corrected for labelled surrogate recoveries.

[redacted], Analyst
Organics - NSW
Accreditation No. 198

31-JAN-2025

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

Measurement Uncertainty is available upon request.

Note: Sampling date(s) have been provided by the client.
The testing was undertaken at: 105 Delhi Road, North Ryde, NSW, 2113

Australian Government
National Measurement Institute

QUALITY ASSURANCE REPORT

Client: AECOM AUSTRALIA PTY LTD

NMI QA Report No: AECO09/241213/1 **Sample Matrix:** Liquid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		ug/L	ug/L	ug/L	ug/L	%	%	%
PFBA (375-22-4)	NR70	0.05	<0.05	NA	NA	NA	124	NA
PFPeA (2706-90-3)	NR70	0.02	<0.02	NA	NA	NA	101	NA
PFHxA (307-24-4)	NR70	0.01	<0.01	NA	NA	NA	101	NA
PFHpA (375-85-9)	NR70	0.01	<0.01	NA	NA	NA	101	NA
PFOA (335-67-1)	NR70	0.01	<0.01	NA	NA	NA	106	NA
PFNA (375-95-1)	NR70	0.01	<0.01	NA	NA	NA	98	NA
PFDA (335-76-2)	NR70	0.01	<0.01	NA	NA	NA	98	NA
PFUdA (2058-94-8)	NR70	0.01	<0.01	NA	NA	NA	100	NA
PFDoA (307-55-1)	NR70	0.01	<0.01	NA	NA	NA	110	NA
PFTrDA (72629-94-8)	NR70	0.02	<0.02	NA	NA	NA	104	NA
PFTeDA (376-06-7)	NR70	0.02	<0.02	NA	NA	NA	118	NA
PFHxDA (67905-19-5)	NR70	0.02	<0.02	NA	NA	NA	121	NA
PFODA (16517-11-6)	NR70	0.05	<0.05	NA	NA	NA	125	NA
FOUEA (70887-84-2)	NR70	0.01	<0.01	NA	NA	NA	95	NA
PFBS (375-73-5)	NR70	0.01	<0.01	NA	NA	NA	98	NA
PFPeS (2706-91-4)	NR70	0.01	<0.01	NA	NA	NA	97	NA
PFHxS (355-46-4)	NR70	0.01	<0.01	NA	NA	NA	89	NA
PFHpS (375-92-8)	NR70	0.01	<0.01	NA	NA	NA	96	NA
PFOS (1763-23-1)	NR70	0.02	<0.02	NA	NA	NA	98	NA
PFNS (68259-12-1)	NR70	0.01	<0.01	NA	NA	NA	99	NA
PFDS (335-77-3)	NR70	0.01	<0.01	NA	NA	NA	94	NA
PFOSA (754-91-6)	NR70	0.01	<0.01	NA	NA	NA	97	NA
N-MeFOSA (31506-32-8)	NR70	0.02	<0.02	NA	NA	NA	92	NA
N-EtFOSA (4151-50-2)	NR70	0.02	<0.02	NA	NA	NA	107	NA
N-MeFOSAA (2355-31-9)	NR70	0.01	<0.01	NA	NA	NA	96	NA
N-EtFOSAA(2991-50-6)	NR70	0.01	<0.01	NA	NA	NA	95	NA
N-MeFOSE (24448-09-7)	NR70	0.05	<0.05	NA	NA	NA	110	NA
N-EtFOSE (1691-99-2)	NR70	0.05	<0.05	NA	NA	NA	93	NA
4:2 FTS (757124-72-4)	NR70	0.01	<0.01	NA	NA	NA	105	NA
6:2 FTS (27619-97-2)	NR70	0.01	<0.01	NA	NA	NA	108	NA
8:2 FTS (39108-34-4)	NR70	0.01	<0.01	NA	NA	NA	106	NA
10:2 FTS (120226-60-0)	NR70	0.01	<0.01	NA	NA	NA	96	NA
8:2 diPAP (678-41-1)	NR70	0.02	<0.02	NA	NA	NA	126	NA

Results expressed in percentage (%) or ug/L wherever appropriate.
Acceptable Spike recovery is 50-150%.
Maximum acceptable RPDs on spikes and duplicates is 40%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference.

Signed: [redacted]
Organics Manager, NMI-North Ryde

Date: **20/12/2024**

Appendix C

Tables

Table T1a - Historical Groundwater Gauging

Site	Location	Date	TOC	Depth to Water	Well Depth	Water Elevation
			mAHD	mbTOC	mbTOC	mAHD
0990	MW104	25/09/2017	133.66	5.323	20.20	128.34
0990	MW104	27/11/2017	133.66	5.739	20.20	127.92
0990	MW104	16/03/2018	133.66	2.940	20.20	130.72
0990	MW104	10/04/2018	133.66	3.998	20.20	129.66
0990	MW104	18/12/2018	133.66	6.150	20.20	127.51
0990	MW104	23/04/2020	133.66	7.818	21.00	125.84
0990	MW104	21/04/2021	133.66	4.123	20.63	129.54
0990	MW104	8/10/2021	133.66	6.775	20.90	126.89
0990	MW104	18/10/2022	133.66	7.898	20.65	125.76
0990	MW104	19/09/2023	133.66	7.062	20.62	126.60
0990	MW104	17/10/2024	133.66	6.550	20.85	127.11
0990	MW104	1/05/2025	133.66	4.475	20.56	129.19
0990	MW106	18/09/2023	130.72	6.975	10.20	123.19
0990	MW106	15/10/2024	130.72	6.450	16.30	126.44
0990	MW106	6/05/2025	130.72	4.447	16.35	126.27
0990	MW107	24/09/2017	131.31	6.273	22.50	124.44
0990	MW107	26/11/2017	131.31	6.648	22.50	124.06
0990	MW107	19/03/2018	131.31	5.591	22.50	125.12
0990	MW107	18/12/2018	131.31	7.063	22.50	123.65
0990	MW107	23/04/2020	131.31	8.602	14.15	122.11
0990	MW107	20/04/2021	131.31	4.964	13.69	125.75
0990	MW107	9/10/2021	131.31	7.593	13.82	123.12
0990	MW107	17/10/2022	131.31	8.606	13.50	122.10
0990	MW107	19/09/2023	131.31	7.955	13.55	122.76
0990	MW107	18/10/2024	131.31	7.370	13.79	123.34
0990	MW107	1/05/2025	131.31	5.384	13.54	125.93
0990	MW109S	18/10/2024	129.28	5.960	7.36	122.68
0990	MW109S	1/05/2025	129.28	3.961	7.13	125.32
0990	MW109D	15/10/2024	129.31	5.930	20.87	122.69
0990	MW109D	6/05/2025	129.31	3.927	20.46	125.38
0990	MW110	24/09/2017	127.67	4.150	13.20	122.82
0990	MW110	26/11/2017	127.67	4.463	13.20	122.51
0990	MW110	19/03/2018	127.67	3.071	13.20	123.90
0990	MW110	10/04/2018	127.67	2.684	13.20	124.29
0990	MW110	10/04/2018	127.67	2.684	13.20	124.29
0990	MW110	10/04/2018	127.67	2.684	13.20	124.29
0990	MW110	20/04/2021	127.67	2.701	5.80	124.27
0990	MW110	9/10/2021	127.67	5.419	10.40	121.55
0990	MW110	17/10/2022	127.67	6.404	12.06	120.57
0990	MW110	19/09/2023	127.67	5.798	12.05	121.17
0990	MW110	15/10/2024	127.67	5.145	17.00	121.83
0990	MW110	1/05/2025	127.67	3.102	12.05	124.57
0990	MW111S	15/10/2024	128.48	6.230	31.47	122.25
0990	MW111D	15/10/2024	128.60	6.500	7.50	122.10
0990	MW111D	6/05/2025	128.60	4.361	50.00	124.24
0990	MW111S	18/10/2024	128.48	6.510	8.39	121.97
0990	MW118S	23/09/2017	126.18	14.270	20.00	111.91
0990	MW118S	26/11/2017	126.18	15.356	20.90	110.82
0990	MW118S	23/04/2020	126.18	17.765	17.90	108.42
0990	MW118S	9/10/2021	126.18	16.468	20.45	109.71
0990	MW118S	19/09/2023	126.18	17.540	20.50	108.64
0990	MW118D	15/10/2024	126.55	16.820	50.00	109.73
0990	MW118D	1/05/2025	126.55	15.402	50.00	111.15
0990	MW118I	15/10/2024	126.51	16.760	36.00	109.75
0990	MW118I	6/05/2025	126.51	15.342	34.20	111.17
0990	MW127	26/09/2017	131.00	2.422	20.00	128.28
0990	MW127	26/11/2017	131.00	2.713	20.00	127.99
0990	MW127	27/01/2018	131.00	0.566	20.00	130.14
0990	MW127	17/05/2018	131.00	1.667	20.00	129.03
0990	MW127	18/12/2018	131.00	3.109	20.00	127.59
0990	MW127	23/04/2020	131.00	4.874	20.70	125.83
0990	MW127	19/04/2021	131.00	1.232	20.71	129.47
0990	MW127	9/10/2021	131.00	3.816	20.84	126.89
0990	MW127	19/10/2022	131.00	4.934	26.72	125.77
0990	MW127	20/09/2023	131.00	4.152	20.77	126.55
0990	MW127	16/10/2024	131.00	3.450	20.00	127.25
0990	MW127	30/04/2025	131.00	1.377	24.70	129.62
0990	MW129	26/09/2017	132.88	3.994	20.10	128.88
0990	MW129	26/11/2017	132.88	4.278	20.10	128.60
0990	MW129	26/01/2018	132.88	2.088	20.10	130.79
0990	MW129	16/03/2018	132.88	2.223	20.10	130.65
0990	MW129	18/12/2018	132.88	4.703	20.90	128.17

Table T1a - Historical Groundwater Gauging

Site	Location	Date	TOC	Depth to Water	Well Depth	Water Elevation
			mAHD	mbTOC	mbTOC	mAHD
0990	MW129	23/04/2020	132.88	6.544	19.83	126.33
0990	MW129	19/04/2021	132.88	2.920	19.58	129.96
0990	MW129	9/10/2021	132.88	5.473	19.74	127.40
0990	MW129	19/10/2022	132.88	6.604	19.60	126.27
0990	MW129	20/09/2023	132.88	5.800	19.50	127.08
0990	MW129	16/10/2024	132.88	5.120	19.50	127.76
0990	MW129	7/05/2025	132.88	3.064	19.51	129.82
0990	MW130	19/10/2024	118.14	9.300	19.22	108.28
0990	MW130	1/05/2025	118.14	7.396	19.24	110.74
0990	MW131	16/10/2024	122.68	8.660	15.27	113.34
0990	MW133	16/10/2024	133.15	5.950	20.00	127.20
0990	MW133	1/05/2025	133.15	2.863	9.22	130.29
0990	MW134	20/09/2017	110.02	7.080	20.50	102.94
0990	MW134	24/11/2017	110.02	8.022	20.50	102.00
0990	MW134	28/03/2018	110.02	3.674	21.50	106.35
0990	MW134	10/04/2018	110.02	4.269	21.50	105.75
0990	MW134	17/01/2019	110.02	9.075	21.50	100.94
0990	MW134	22/04/2021	110.02	7.275	10.00	102.74
0990	MW134	1/05/2025	110.02	9.991	21.45	100.03
0990	MW135	22/09/2017	117.30	16.050	19.10	101.25
0990	MW135	24/11/2017	117.30	16.858	19.10	100.44
0990	MW135	17/01/2019	117.30	18.805	19.10	98.50
0990	MW135	22/04/2021	117.30	16.889	19.30	100.41
0990	MW135	9/10/2021	117.30	17.920	19.20	99.38
0990	MW135	25/09/2023	117.30	19.072	19.67	98.23
0990	MW136	22/09/2017	107.52	10.770	24.40	96.75
0990	MW136	21/11/2017	107.52	11.328	24.40	96.19
0990	MW136	19/01/2018	107.52	10.121	24.40	97.40
0990	MW136	16/10/2024	107.52	11.722	25.40	95.80
0990	MW136	1/05/2025	107.52	10.224	25.52	97.30
0990	MW137	22/09/2017	109.87	11.540	20.00	98.33
0990	MW137	24/11/2017	109.87	12.216	20.00	97.65
0990	MW137	16/01/2018	109.87	12.139	20.00	97.73
0990	MW137	18/01/2019	109.87	12.961	-	96.91
0990	MW137	20/04/2020	109.87	15.202	-	94.67
0990	MW137	20/04/2021	109.87	11.120	20.10	98.75
0990	MW137	10/10/2021	109.87	13.049	20.32	96.82
0990	MW137	18/10/2022	109.87	14.697	20.07	95.17
0990	MW137	25/09/2023	109.87	14.285	20.10	95.59
0990	MW137	16/10/2024	109.87	13.294	20.10	96.58
0990	MW137	1/05/2025	109.87	12.219	20.10	97.65
0990	MW138	22/09/2017	106.74	9.540	19.50	97.20
0990	MW138	24/11/2017	106.74	10.811	19.50	95.93
0990	MW138	19/01/2018	106.74	9.400	19.50	97.34
0990	MW138	18/01/2019	106.74	10.816	-	95.92
0990	MW138	20/04/2021	106.74	8.068	11.10	98.67
0990	MW138	1/05/2025	106.74	9.422	19.60	97.32
0990	MW140	22/09/2017	102.85	6.200	18.70	96.65
0990	MW140	24/11/2017	102.85	6.811	18.70	96.03
0990	MW140	16/01/2018	102.85	5.806	18.70	97.04
0990	MW140	18/12/2018	102.85	7.355	-	95.49
0990	MW140	20/04/2020	102.85	9.176	-	93.67
0990	MW140	20/04/2021	102.85	4.588	18.67	98.26
0990	MW140	9/10/2021	102.85	7.628	18.70	95.22
0990	MW140	18/10/2022	102.85	9.105	18.59	93.74
0990	MW140	25/09/2023	102.85	8.518	18.99	94.33
0990	MW140	15/10/2024	102.85	7.646	18.99	95.20
0990	MW140	1/05/2025	102.85	9.997	15.13	92.85
0990	MW142	21/09/2017	102.23	7.860	18.10	94.37
0990	MW142	22/11/2017	102.23	8.414	18.10	93.82
0990	MW142	16/01/2018	102.23	7.291	18.10	94.94
0990	MW142	18/12/2018	102.23	8.905	-	93.33
0990	MW142	20/04/2021	102.23	6.115	10.37	96.12
0990	MW142	9/10/2021	102.23	9.185	10.90	93.05
0990	MW142	18/10/2022	102.23	10.532	10.95	91.70
0990	MW142	25/09/2023	102.23	9.886	18.94	92.35
0990	MW142	16/10/2024	102.23	9.187	18.94	93.05
0990	MW142	1/05/2025	102.23	7.665	18.80	94.57
0990	MW144	21/09/2017	101.23	7.810	20.00	93.42
0990	MW144	24/11/2017	101.23	8.557	20.00	92.68
0990	MW144	19/01/2018	101.23	7.856	20.00	93.38
0990	MW144	18/12/2018	101.23	8.956	-	92.28
0990	MW144	20/04/2020	101.23	9.914	-	91.32

Table T1a - Historical Groundwater Gauging

Site	Location	Date	TOC	Depth to Water	Well Depth	Water Elevation
			mAHD	mbTOC	mbTOC	mAHD
0990	MW144	20/04/2021	101.23	5.180	20.11	96.05
0990	MW144	9/10/2021	101.23	8.912	20.25	92.32
0990	MW144	18/10/2022	101.23	9.999	20.12	91.24
0990	MW144	25/09/2023	101.23	9.755	20.12	91.48
0990	MW144	16/10/2024	101.23	9.325	20.12	91.91
0990	MW144	1/05/2025	101.23	7.901	20.10	93.33
0990	MW146	16/10/2024	131.75	4.000	18.10	127.67
0990	MW146	30/04/2025	131.75	1.946	17.49	129.80
0990	MW149	20/10/2022	133.50	7.242	17.67	126.26
0990	MW149	20/09/2023	133.50	6.437	17.66	127.06
0990	MW149	16/10/2024	133.50	5.750	17.50	127.75
0990	MW149	30/04/2025	133.50	3.749	17.17	129.75
0990	MW231	23/07/2017	135.22	3.560	24.00	130.96
0990	MW231	24/09/2017	135.22	4.264	24.00	130.26
0990	MW231	28/03/2018	135.22	1.927	24.00	132.60
0990	MW231	18/12/2018	135.22	5.905	24.00	128.62
0990	MW231	23/04/2020	135.22	8.693	24.10	125.83
0990	MW231	21/04/2021	135.22	2.154	24.10	132.37
0990	MW231	8/10/2021	135.22	4.546	23.90	129.98
0990	MW231	18/10/2022	135.22	6.606	23.59	127.92
0990	MW231	19/09/2023	135.22	7.964	24.00	126.56
0990	MW231	15/10/2024	135.22	7.555	23.80	126.97
0990	MW231	6/05/2025	135.22	3.464	23.29	131.76
0990	MW244	20/07/2017	142.96	9.525	20.60	133.44
0990	MW244	25/09/2017	142.96	10.162	20.60	132.80
0990	MW244	27/11/2017	142.96	10.728	20.60	132.23
0990	MW244	27/03/2018	142.96	9.214	20.60	133.75
0990	MW244	18/12/2018	142.96	11.382	-	131.58
0990	MW244	23/04/2020	142.96	13.568	21.00	129.39
0990	MW244	21/04/2021	142.96	11.300	21.00	131.66
0990	MW244	9/10/2021	142.96	12.346	20.75	130.61
0990	MW244	18/10/2022	142.96	13.565	26.63	129.40
0990	MW244	20/09/2023	142.96	12.564	20.56	130.40
0990	MW244	16/10/2024	142.96	11.490	21.00	131.47
0990	MW244	30/04/2025	142.96	9.961	21.00	133.00
0990	MW278	2/05/2017	139.46	5.687	22.90	133.77
0990	MW278	20/07/2017	139.46	6.806	22.90	132.65
0990	MW278	28/09/2017	139.46	7.468	22.90	131.99
0990	MW278	28/11/2017	139.46	7.864	22.90	131.60
0990	MW278	17/01/2019	139.46	8.358	22.90	131.10
0990	MW278	23/04/2020	139.46	10.302	22.86	129.16
0990	MW278	19/04/2021	139.46	2.174	22.80	137.29
0990	MW278	8/10/2021	139.46	9.234	23.02	130.23
0990	MW278	18/10/2022	139.46	10.375	27.95	129.09
0990	MW278	20/09/2023	139.46	9.405	23.10	130.06
0990	MW278	16/10/2024	139.46	8.780	23.15	130.68
0990	MW278	30/04/2025	139.46	7.074	22.95	132.39
0990	MW281	2/05/2017	139.70	5.960	7.00	133.74
0990	MW281	20/07/2017	139.70	6.228	7.00	133.47
0990	MW285	20/07/2017	131.30	3.557	18.00	127.87
0990	MW285	28/09/2017	131.30	3.454	18.00	127.98
0990	MW285	28/11/2017	131.30	3.595	18.00	127.84
0990	MW285	29/01/2018	131.30	1.263	18.00	130.17
0990	MW285	18/12/2018	131.30	4.041	18.58	127.39
0990	MW285	23/04/2020	131.30	5.816	18.60	125.61
0990	MW285	19/04/2021	131.30	2.190	18.60	129.24
0990	MW285	7/10/2021	131.30	5.734	18.75	125.70
0990	MW285	18/10/2022	131.30	5.845	18.70	125.59
0990	MW285	20/09/2023	131.30	5.012	21.03	126.42
0990	MW285	16/10/2024	131.30	4.319	18.76	127.11
0990	MW285	30/04/2025	131.30	2.248	20.87	129.05
0990	MW400	14/05/2018	111.08	4.800	50.00	-
0990	MW400	19/12/2018	111.08	9.518	50.00	-
0990	MW400	24/04/2020	111.08	12.544	50.00	-
0990	MW400	20/04/2021	111.08	7.864	50.00	-
0990	MW400	9/10/2021	111.08	9.834	50.00	-
0990	MW400	19/10/2022	111.08	11.964	50.00	-
0990	MW400	25/09/2023	111.08	11.074	50.00	-
0990	MW400	16/10/2024	111.08	9.824	50.00	-
0990	MW400	1/05/2025	111.08	8.682	50.00	102.40
0990	MW403	23/09/2017	133.90	8.165	10.50	-
0990	MW403	26/11/2017	133.90	8.835	10.50	-
0990	MW403	20/04/2021	133.90	7.719	11.36	-

Table T1a - Historical Groundwater Gauging

Site	Location	Date	TOC	Depth to Water	Well Depth	Water Elevation
			mAHD	mbTOC	mbTOC	mAHD
0990	MW403	9/10/2021	133.90	9.824	11.43	-
0990	MW403	19/09/2023	133.90	10.225	11.45	-
0990	MW403	16/10/2024	133.90	9.760	11.37	124.14
0990	MW403	9/12/2024	133.90	9.989	11.45	123.91
0990	MW403	1/05/2025	133.90	8.452	10.52	125.45
0990	MW406	26/09/2017	131.90	3.882	19.80	128.82
0990	MW406	16/03/2018	131.90	2.115	19.80	130.59
0990	MW406	23/04/2020	131.90	6.431	19.60	126.27
0990	MW406	19/04/2021	131.90	2.805	19.28	129.90
0990	MW406	9/10/2021	131.90	5.306	19.29	127.40
0990	MW406	13/12/2023	131.90	6.436	17.66	126.26
0990	MW732	12/05/2017	-	6.530	46.90	-
0990	MW732	19/07/2017	-	7.542	46.90	-
0990	MW732	26/09/2017	-	9.250	46.90	-
0990	MW732	27/11/2017	-	9.617	46.90	-
0990	MW732	21/04/2020	-	13.440	46.90	-
0990	MW732	9/10/2021	-	10.803	46.90	-
0990	MW732	19/10/2022	-	13.286	46.90	-
0990	MW732	25/09/2023	-	11.982	46.90	-
0990	MW801S	18/10/2024	129.42	4.930	11.54	124.49
0990	MW801S	6/05/2025	129.42	3.022	11.54	126.40
0990	MW802D	16/10/2024	132.71	5.090	19.50	127.62
0990	MW802D	30/04/2025	132.71	2.990	19.34	129.72
0990	MW802I	16/10/2024	132.95	5.140	15.34	127.81
0990	MW802I	30/04/2025	132.95	3.088	14.97	129.86
0990	MW802S	16/10/2024	132.88	5.210	10.55	127.67
0990	MW802S	30/04/2025	132.88	3.164	10.48	129.72
0990	MW803D	15/10/2024	133.82	7.450	25.64	126.37
0990	MW803D	1/05/2025	133.82	5.517	25.32	128.30
0990	MW803I	15/10/2024	133.84	7.470	16.00	126.37
0990	MW803I	1/05/2025	133.84	5.451	15.06	128.39
0990	MW803S	15/10/2024	133.87	7.440	11.00	126.43
0990	MW803S	1/05/2025	133.87	3.679	10.99	130.19
0990	MW814	6/05/2025	105.71	16.655	16.66	89.06
0990	MW815	6/05/2025	106.62	13.575	31.75	93.05
0990	OTH111	26/09/2023	144.96	14.020	64.00	-
0990	OTH111	16/10/2024	144.96	17.790	64.00	127.17
0990	OTH111	30/04/2025	144.96	11.424	50.00	133.53
0990	OTH114	31/10/2019	-	16.524	-	-

Table T1 b
Current and Historical Groudnwater Field Results
PFAS Ongoing Monitoring Report
Department of Defence - RAAF Base Tindal

Table T1b - Historical Groundwater Water Quality Parameters

Site	Location	Date	DO	Temp.	Redox Potential	Redox Potential Corrected	Electrical Conductivity	pH
			mg/L	°C	mV	mV	µS/cm	pH Units
0990	MW104	25/09/2017	0.58	30.2	0.2	200.2	1215	6.90
0990	MW104	27/11/2017	0.68	29.7	-30.9	169.1	993	6.84
0990	MW104	16/03/2018	2.27	32.3	131.9	331.9	1353	7.34
0990	MW104	10/04/2018	2.26	28.3	95.6	295.6	652	7.28
0990	MW104	27/06/2018	0.68	30.7	165.8	365.8	1026	6.50
0990	MW104	18/12/2018	5.88	29.6	95.0	295.0	208	6.70
0990	MW104	17/09/2019	-	31.5	152.4	352.4	919	6.36
0990	MW104	4/12/2019	0.77	30.5	142.3	342.3	824	6.47
0990	MW104	23/04/2020	-	31.7	156.8	356.8	862	6.89
0990	MW104	18/11/2020	-	30.5	349.3	549.3	746	6.92
0990	MW104	26/03/2021	-	33.4	-13.8	186.2	865	6.98
0990	MW104	21/04/2021	0.7	28.1	1.7	201.7	1017	7.29
0990	MW104	8/06/2021	1.31	30.4	69.4	269.4	883	7.66
0990	MW104	8/10/2021	1.58	29.8	83.0	283.0	822	7.74
0990	MW104	18/10/2022	1.01	31.6	58.5	258.5	855	6.75
0990	MW104	25/09/2023	1.89	30.4	-	-	457	6.67
0990	MW104	31/03/2024	0.09	30.8	-	-	1094	7.12
0990	MW104	13/05/2024	2.48	30.4	88.3	288.3	1052	6.64
0990	MW104	17/10/2024	1.93	33.0	48.5	248.5	400	6.72
0990	MW104	6/05/2025	1.33	30.7	63.6	263.6	768	6.82
0990	MW106	24/09/2017	2.12	31.0	125.0	325.0	942	7.21
0990	MW106	26/11/2017	0.53	28.4	215.6	415.6	824	6.93
0990	MW106	19/03/2018	1.32	30.7	110.2	310.2	1052	6.73
0990	MW106	18/11/2020	-	31.7	429.6	629.6	965	7.00
0990	MW106	21/10/2022	0.94	31.1	-40.7	159.3	878	6.81
0990	MW106	27/09/2023	2.48	28.5	-	-	844	6.69
0990	MW106	31/03/2024	0.14	30.5	-	-	1257	7.12
0990	MW106	14/05/2024	1.94	29.6	33.0	233.0	1435	6.78
0990	MW106	18/10/2024	1.64	31.7	77.2	277.2	811	6.69
0990	MW106	6/05/2025	0.46	31.2	-12.1	187.9	972	6.87
0990	MW107	24/09/2017	1.32	31.9	113.0	313.0	919	7.23
0990	MW107	26/11/2017	0.35	29.3	244.2	444.2	826	6.91
0990	MW107	19/03/2018	1.51	30.8	103.6	303.6	1000	6.82
0990	MW107	18/12/2018	3.51	29.1	9.3	209.3	759	6.94
0990	MW107	23/04/2020	0.97	30.2	164.6	364.6	806	7.01
0990	MW107	18/11/2020	-	31.6	430.6	630.6	920	7.16
0990	MW107	20/04/2021	1.99	32.7	19.1	219.1	594	7.22
0990	MW107	9/10/2021	1.3	31.3	-1.9	198.1	838	7.45
0990	MW107	17/10/2022	0.91	30.6	-66.9	133.1	855	6.76
0990	MW107	27/09/2023	1.74	27.7	-	-	799	6.80
0990	MW107	31/03/2024	0.11	30.4	-	-	812	7.07
0990	MW107	14/05/2024	1.98	29.4	-2.6	197.4	904	6.75
0990	MW107	18/10/2024	2.1	31.7	17.2	217.2	858	6.72
0990	MW107	6/05/2025	0.57	30.7	-13.6	186.4	776	6.86
0990	MW109D	24/09/2017	2.78	32.4	133.0	333.0	983	7.07
0990	MW109D	26/11/2017	0.45	29.4	269.4	469.4	809	7.09
0990	MW109D	19/03/2018	3.32	30.2	108.6	308.6	999	7.14
0990	MW109D	18/12/2018	2.21	29.8	48.0	248.0	461	7.04
0990	MW109D	24/10/2022	0.62	30.7	-71.5	128.5	704	6.85
0990	MW109D	27/09/2023	2.31	28.7	-	-	803	6.69
0990	MW109D	31/03/2024	0.12	30.1	-	-	823	7.07
0990	MW109D	14/05/2024	1.72	30.2	41.6	241.6	881	6.69
0990	MW109D	18/10/2024	1.6	32.3	96.8	296.8	939	6.77
0990	MW109D	6/05/2025	2.01	30.6	-111.2	88.8	705	6.90
0990	MW109S	24/09/2017	1.47	32.0	120.7	320.7	932	7.10
0990	MW109S	26/11/2017	0.44	29.6	260.8	460.8	838	6.83
0990	MW109S	19/03/2018	3.34	29.7	115.0	315.0	991	7.42
0990	MW109S	27/09/2023	1.97	27.9	-	-	812	6.54
0990	MW109S	14/05/2024	2.24	30.6	-17.4	182.6	923	6.87
0990	MW109S	18/10/2024	2.35	31.6	-28.0	172.0	899	6.63
0990	MW109S	6/05/2025	0.46	30.6	-167.2	32.8	807	6.92
0990	MW110	24/09/2017	1.31	30.5	108.0	308.0	942	7.10
0990	MW110	26/11/2017	0.4	30.2	257.4	457.4	854	6.86
0990	MW110	19/03/2018	0.93	31.1	116.1	316.1	1228	6.73
0990	MW110	10/04/2018	1.83	28.2	98.6	298.6	798	7.08
0990	MW110	10/04/2018	2.57	28.6	85.9	285.9	729	7.16
0990	MW110	18/11/2020	-	31.8	358.4	558.4	966	6.79

Table T1 b
Current and Historical Groudnwater Field Results
PFAS Ongoing Monitoring Report
Department of Defence - RAAF Base Tindal

Table T1b - Historical Groundwater Water Quality Parameters

Site	Location	Date	DO	Temp.	Redox Potential	Redox Potential Corrected	Electrical Conductivity	pH
			mg/L	°C	mV	mV	µS/cm	pH Units
0990	MW110	20/04/2021	0.81	31.3	-38.7	161.3	833	6.70
0990	MW110	9/10/2021	0.8	31.6	28.9	228.9	853	7.55
0990	MW110	17/10/2022	1.25	30.9	5.0	205.0	853	6.80
0990	MW110	27/09/2023	3.28	24.2	-	-	746	6.73
0990	MW110	31/03/2024	0.08	30.5	-	-	871	7.10
0990	MW110	14/05/2024	9.68	32.7	52.0	252.0	745	6.70
0990	MW110	18/10/2024	1.4	31.3	113.4	313.4	1000	6.68
0990	MW110	6/05/2025	0.64	30.8	56.4	256.4	777	6.82
0990	MW111D	24/10/2022	1.12	31.6	-	-	1141	7.05
0990	MW111D	27/09/2023	0.87	29.2	-	-	822	6.67
0990	MW111D	14/05/2024	6.63	31.7	-10.1	189.9	698	6.75
0990	MW111D	18/10/2024	0.92	32.7	26.3	226.3	993	6.84
0990	MW111D	6/05/2025	1.16	31.9	140.2	340.2	783	6.89
0990	MW111S	23/09/2017	1.83	31.0	112.0	312.0	1046	7.01
0990	MW111S	26/11/2017	0.42	29.2	249.6	449.6	858	6.85
0990	MW111S	19/03/2018	0.66	30.8	111.9	311.9	1521	6.78
0990	MW111S	24/10/2022	1.15	30.9	73.2	273.2	810	7.02
0990	MW111S	27/09/2023	0.95	27.9	-	-	1007	6.38
0990	MW111S	31/03/2024	0.12	30.4	-	-	783	7.01
0990	MW111S	14/05/2024	6.93	30.6	35.9	235.9	747	6.71
0990	MW111S	18/10/2024	0.8	32.7	15.4	215.4	1095	6.56
0990	MW111S	6/05/2025	4.01	31.6	160.2	360.2	829	6.91
0990	MW117	23/09/2017	1.69	32.3	133.0	333.0	949	6.97
0990	MW117	26/11/2017	0.25	29.8	218.3	418.3	830	6.90
0990	MW117	20/04/2021	1.5	31.2	64.6	264.6	900	7.17
0990	MW118D	21/10/2022	2.4	30.2	66.2	266.2	868	7.09
0990	MW118D	27/09/2023	1.03	29.3	-	-	867	6.75
0990	MW118D	14/05/2024	2.19	30.2	90.0	290.0	933	6.62
0990	MW118D	18/10/2024	1.48	30.8	98.4	298.4	968	6.63
0990	MW118D	6/05/2025	0.66	30.9	2.7	202.7	772	6.76
0990	MW118I	21/10/2022	2.46	29.6	63.5	263.5	856	7.17
0990	MW118I	27/09/2023	1.28	29.6	-	-	870	6.72
0990	MW118I	31/03/2024	0.61	31.7	-	-	831	6.81
0990	MW118I	14/05/2024	2.34	29.7	91.1	291.1	924	6.68
0990	MW118I	18/10/2024	2.28	32.0	31.8	231.8	910	6.74
0990	MW118I	6/05/2025	1.15	30.9	22.8	222.8	817	6.76
0990	MW118S	23/09/2017	1.58	31.0	124.0	324.0	989	6.86
0990	MW118S	26/11/2017	0.34	30.6	218.1	418.1	897	6.86
0990	MW118S	23/04/2020	2.11	28.4	168.4	368.4	931	6.77
0990	MW118S	9/10/2021	1.95	31.7	113.2	313.2	934	7.39
0990	MW118S	31/03/2024	0.54	29.8	-	-	9	6.83
0990	MW118S	14/05/2024	2.3	30.2	91.8	291.8	983	6.57
0990	MW119	23/09/2017	1.71	30.9	121.0	321.0	962	7.01
0990	MW119	26/11/2017	0.46	29.6	236.3	436.3	841	6.88
0990	MW119	27/09/2023	2.44	29.9	-	-	879	6.62
0990	MW127	26/09/2017	0.87	31.1	64.0	264.0	919	6.79
0990	MW127	26/11/2017	0.73	30.9	144.1	344.1	846	6.78
0990	MW127	27/01/2018	1.05	28.3	44.0	244.0	857	7.85
0990	MW127	17/05/2018	2.02	28.0	142.0	342.0	801	7.40
0990	MW127	2/07/2018	0.27	29.8	2.2	202.2	758	6.45
0990	MW127	18/12/2018	4.5	30.9	88.4	288.4	543	6.98
0990	MW127	16/09/2019	0.23	30.6	157.6	357.6	912	7.64
0990	MW127	3/12/2019	0.09	31.8	171.8	371.8	807	6.35
0990	MW127	23/04/2020	0.9	32.6	195.8	395.8	868	6.90
0990	MW127	18/11/2020	-	31.0	335.3	535.3	924	7.01
0990	MW127	19/04/2021	0.68	30.5	77.4	277.4	625	7.09
0990	MW127	7/06/2021	0.83	32.7	91.9	291.9	891	7.63
0990	MW127	9/10/2021	0.6	30.6	76.0	276.0	820	7.37
0990	MW127	19/10/2022	0.91	32.2	79.6	279.6	878	6.82
0990	MW127	28/02/2023	2.79	29.1	-	-	282	7.49
0990	MW127	26/09/2023	0.91	29.3	-	-	815	6.78
0990	MW127	13/02/2024	1.44	30.2	-138.4	61.6	610	6.97
0990	MW127	31/03/2024	1.62	31.4	-	-	1338	10.98
0990	MW127	13/05/2024	6.31	31.8	81.9	281.9	698	6.68
0990	MW127	19/10/2024	0.62	31.2	58.7	258.7	784	6.71
0990	MW127	20/03/2025	1.48	35.2	-127.6	72.4	701	7.16
0990	MW127	7/05/2025	1.05	30.2	117.2	317.2	750	6.99
0990	MW127		1.44	30.2	-138.4	61.6	610	6.97

Table T1b - Historical Groundwater Water Quality Parameters

Site	Location	Date	DO	Temp.	Redox Potential	Redox Potential Corrected	Electrical Conductivity	pH
			mg/L	°C	mV	mV	µS/cm	pH Units
0990	MW129	26/09/2017	0.82	33.2	120.4	320.4	923	6.90
0990	MW129	26/11/2017	0.52	32.1	13.5	213.5	800	6.86
0990	MW129	26/01/2018	0.37	32.7	23.3	223.3	851	6.27
0990	MW129	16/03/2018	1.98	31.3	144.7	344.7	991	7.15
0990	MW129	3/07/2018	0.18	32.6	53.9	253.9	693	6.23
0990	MW129	18/12/2018	5.24	32.4	88.8	288.8	635	6.91
0990	MW129	16/09/2019	0.06	31.9	161.8	361.8	892	6.32
0990	MW129	3/12/2019	0.04	32.4	56.9	256.9	786	6.33
0990	MW129	23/04/2020	0.87	32.0	78.8	278.8	829	7.05
0990	MW129	25/03/2021	-	37.3	6.1	206.1	732	6.71
0990	MW129	19/04/2021	0.95	31.2	-81.3	118.7	781	7.08
0990	MW129	9/10/2021	0.86	32.2	70.2	270.2	818	7.54
0990	MW129	19/10/2022	1.01	32.9	76.2	276.2	856	6.86
0990	MW129	26/09/2023	0.82	31.7	-	-	851	6.69
0990	MW129	31/03/2024	0.15	31.2	-	-	724	6.60
0990	MW129	13/05/2024	2.27	30.9	92.0	292.0	755	6.68
0990	MW129	19/10/2024	1.37	32.6	141.1	341.1	863	6.85
0990	MW129	7/05/2025	1.46	33.9	100.3	300.3	471	6.63
0990	MW130	21/09/2017	3	31.7	131.4	331.4	864	6.71
0990	MW130	26/11/2017	0.22	29.1	212.6	412.6	796	6.98
0990	MW130	21/03/2018	3.62	29.9	148.7	348.7	933	7.67
0990	MW130	21/10/2022	1.29	28.9	62.1	262.1	814	6.92
0990	MW130	27/09/2023	2.32	29.3	-	-	834	6.71
0990	MW130	31/03/2024	0.05	32.4	-	-	735	6.64
0990	MW130	15/05/2024	6.68	25.7	27.4	227.4	616	6.78
0990	MW130	18/10/2024	2.19	31.1	142.3	342.3	948	6.75
0990	MW130	6/05/2025	3.72	29.7	94.5	294.5	797	6.87
0990	MW131	23/09/2017	1.89	30.2	129.0	329.0	953	7.36
0990	MW131	27/11/2017	0.47	28.4	97.1	297.1	818	6.82
0990	MW131	20/01/2018	0.72	29.7	-	-	815	6.60
0990	MW131	21/03/2018	0.66	29.7	-100.5	99.5	894	7.57
0990	MW131	26/09/2023	-	31.9	-	-	906	6.65
0990	MW131	15/05/2024	2.92	27.8	73.6	273.6	804	6.92
0990	MW131	18/10/2024	1.58	30.9	47.3	247.3	870	6.70
0990	MW132	21/09/2017	1.57	29.8	129.0	329.0	863	6.80
0990	MW132	27/11/2017	0.5	29.1	110.4	310.4	794	6.88
0990	MW132	20/01/2018	0.59	30.8	-	-	789	6.62
0990	MW132	21/03/2018	3.88	28.9	102.2	302.2	883	7.24
0990	MW132	24/04/2020	0.81	28.6	84.9	284.9	789	6.99
0990	MW132	9/10/2021	1.36	31.0	88.5	288.5	790	7.68
0990	MW132	21/10/2022	0.9	29.0	79.8	279.8	815	6.85
0990	MW132	26/09/2023	3.57	30.6	-	-	873	6.66
0990	MW132	31/03/2024	1.6	30.4	-	-	711	6.75
0990	MW132	15/05/2024	2.86	27.3	17.3	217.3	797	6.78
0990	MW134	20/09/2017	2.71	30.1	125.0	325.0	1022	7.18
0990	MW134	24/11/2017	2.1	32.2	154.9	354.9	933	6.99
0990	MW134	28/03/2018	3.65	32.7	111.7	311.7	918	6.91
0990	MW134	10/04/2018	2.32	29.2	63.9	263.9	775	7.30
0990	MW134	17/01/2019	3.45	30.6	71.1	271.1	797	6.82
0990	MW134	22/04/2021	0.55	32.7	-59.9	140.1	1084	6.83
0990	MW134	8/05/2025	1.35	29.0	88.8	288.8	843	6.64
0990	MW135	22/09/2017	1.3	31.2	112.6	312.6	1242	7.13
0990	MW135	24/11/2017	2.24	31.2	165.5	365.5	1100	7.21
0990	MW135	17/01/2019	5.5	31.2	50.7	250.7	894	7.11
0990	MW135	22/04/2021	0.79	30.9	118.9	318.9	845	7.36
0990	MW135	9/10/2021	0.99	31.8	129.2	329.2	927	7.31
0990	MW135	25/09/2023	1.89	30.2	-	-	687	-
0990	MW135	21/10/2024	1.74	30.5	56.6	256.6	1101	6.76
0990	MW135	8/05/2025	1.9	30.1	102.0	302.0	833	6.89
0990	MW136	22/09/2017	2.64	28.3	162.1	362.1	829	7.18
0990	MW136	21/11/2017	1.81	31.0	184.1	384.1	845	7.34
0990	MW136	19/01/2018	0.49	30.4	-	-	802	7.88
0990	MW136	20/10/2024	0.53	31.7	153.8	353.8	903	6.35
0990	MW136	6/05/2025	3.21	30.6	17.8	217.8	795	6.89
0990	MW137	22/09/2017	2.58	30.3	126.1	326.1	860	6.69
0990	MW137	24/11/2017	1.85	31.0	199.5	399.5	855	6.98
0990	MW137	16/01/2018	0.53	30.6	-	-	819	6.55
0990	MW137	18/01/2019	1.54	31.3	77.2	277.2	758	6.86

Table T1b - Historical Groundwater Water Quality Parameters

Site	Location	Date	DO	Temp.	Redox Potential	Redox Potential Corrected	Electrical Conductivity	pH
			mg/L	°C	mV	mV	µS/cm	pH Units
0990	MW137	20/04/2020	1.89	31.4	217.0	417.0	802	6.94
0990	MW137	20/04/2021	1.77	29.0	47.4	247.4	740	6.77
0990	MW137	10/10/2021	1.68	32.3	94.8	294.8	868	6.93
0990	MW137	18/10/2022	1.84	30.5	75.3	275.3	781	6.75
0990	MW137	25/09/2023	2.5	32.4	-	-	857	6.81
0990	MW137	20/10/2024	2.17	31.7	133.2	333.2	978	6.74
0990	MW137	6/05/2025	1.84	29.3	94.2	294.2	78	6.94
0990	MW138	22/09/2017	3.76	29.5	125.9	325.9	974	6.82
0990	MW138	24/11/2017	2.32	30.6	213.9	413.9	939	6.90
0990	MW138	19/01/2018	1.1	29.4	-	-	899	6.52
0990	MW138	18/01/2019	3.86	30.0	78.8	278.8	817	6.81
0990	MW138	20/04/2021	0.79	27.7	-96.6	103.4	987	6.62
0990	MW138	6/05/2025	1.34	29.6	-78.3	121.7	895	6.91
0990	MW140	22/09/2017	3.92	29.9	192.4	392.4	632	7.25
0990	MW140	24/11/2017	1.51	31.9	121.3	321.3	599	7.30
0990	MW140	16/01/2018	0.56	32.2	-	-	653	6.77
0990	MW140	18/12/2018	2.85	31.9	100.0	300.0	697	7.17
0990	MW140	20/04/2020	1.52	32.2	217.1	417.1	803	6.97
0990	MW140	20/04/2021	3.12	28.6	48.6	248.6	578	7.05
0990	MW140	9/10/2021	3.78	31.7	52.3	252.3	590	7.16
0990	MW140	18/10/2022	1.9	32.7	87.0	287.0	811	6.89
0990	MW140	25/09/2023	2.79	32.7	-	-	655	6.83
0990	MW140	1/11/2024	4.59	33.1	147.2	347.2	568	5.24
0990	MW140	7/05/2025	3.29	30.9	106.2	306.2	466	7.24
0990	MW142	21/09/2017	1.2	30.1	139.0	339.0	849	6.93
0990	MW142	22/11/2017	0.76	30.1	223.2	423.2	803	7.00
0990	MW142	16/01/2018	0.73	29.8	-	-	772	6.63
0990	MW142	18/12/2018	4.69	29.6	93.6	293.6	827	6.68
0990	MW142	20/04/2021	1.09	27.2	-92.6	107.4	787	6.85
0990	MW142	9/10/2021	0.92	30.0	-100.2	99.8	-	6.86
0990	MW142	18/10/2022	0.98	31.2	132.2	332.2	431	6.98
0990	MW142	25/09/2023	2.28	30.0	-	-	828	6.76
0990	MW142	19/10/2024	1.17	30.7	116.6	316.6	848	6.62
0990	MW142	6/05/2025	1.13	29.7	85.3	285.3	758	6.83
0990	MW144	21/09/2017	1.57	32.0	166.0	366.0	988	6.83
0990	MW144	24/11/2017	5.27	31.4	51.8	251.8	1234	6.79
0990	MW144	19/01/2018	0.6	31.4	-	-	1172	6.60
0990	MW144	18/12/2018	3.61	30.9	71.4	271.4	977	6.80
0990	MW144	20/04/2020	0.65	31.9	185.3	385.3	1149	6.90
0990	MW144	20/04/2021	1.17	27.3	89.5	289.5	950	6.89
0990	MW144	9/10/2021	1.76	31.9	129.0	329.0	1334	6.43
0990	MW144	18/10/2022	1.33	31.7	115.0	315.0	1120	6.99
0990	MW144	25/09/2023	0.9	31.0	-	-	1120	6.75
0990	MW144	19/10/2024	1.17	30.0	141.6	341.6	1320	6.72
0990	MW144	6/05/2025	2.36	30.8	150.4	350.4	1017	6.91
0990	MW146	16/09/2019	0.06	32.2	-39.0	161.0	899	7.45
0990	MW146	3/12/2019	0.02	32.0	167.4	367.4	772	6.83
0990	MW146	20/10/2022	1.2	32.3	87.9	287.9	838	6.82
0990	MW146	26/09/2023	1.19	29.7	-	-	885	6.86
0990	MW146	8/05/2024	0.4	31.4	50.9	250.9	800	6.72
0990	MW146	19/10/2024	1.44	30.4	64.9	264.9	792	6.82
0990	MW146	7/05/2025	0.32	31.3	17.3	217.3	750	6.95
0990	MW149	17/09/2019	0.11	30.8	64.5	264.5	666	8.05
0990	MW149	3/12/2019	0.03	31.6	195.0	395.0	606	6.69
0990	MW149	23/03/2021	-	35.6	-37.2	162.8	500	7.26
0990	MW149	26/09/2023	1.17	29.5	-	-	638	6.99
0990	MW149	8/05/2024	1.42	30.8	49.2	249.2	615	6.88
0990	MW149	19/10/2024	1.75	30.2	51.1	251.1	720	7.14
0990	MW149	12/02/2025	2.96	32.5	67.5	267.5	542	7.07
0990	MW149	7/05/2025	1.02	31.6	59.0	259.0	575	7.04
0990	MW231	23/07/2017	1.34	29.7	11.1	211.1	169	6.20
0990	MW231	24/09/2017	1.01	32.0	31.2	231.2	235	5.67
0990	MW231	28/03/2018	1.27	30.5	89.1	289.1	117	5.64
0990	MW231	29/06/2018	0.28	29.4	8.5	208.5	205	5.59
0990	MW231	18/12/2018	4	30.3	86.0	286.0	102	6.57
0990	MW231	17/09/2019	-	30.1	943.8	1143.8	140	6.89
0990	MW231	5/12/2019	-	31.4	118.8	318.8	138	5.90
0990	MW231	23/04/2020	0.84	30.9	126.4	326.4	167	6.54

Table T1b - Historical Groundwater Water Quality Parameters

Site	Location	Date	DO	Temp.	Redox Potential	Redox Potential Corrected	Electrical Conductivity	pH
			mg/L	°C	mV	mV	µS/cm	pH Units
0990	MW231	21/04/2021	0.58	31.7	18.7	218.7	220	6.90
0990	MW231	8/10/2021	0.8	30.1	-17.2	182.8	321	7.43
0990	MW231	18/10/2022	0.67	32.0	-	-	342	6.47
0990	MW231	1/03/2023	1.94	27.1	-	-	153	5.78
0990	MW231	26/09/2023	1.12	30.6	-	-	372	6.28
0990	MW231	26/09/2023	-	31.5	-116.5	83.5	370	6.05
0990	MW231	26/09/2023	-	31.3	-113.2	86.8	365	6.10
0990	MW231	13/05/2024	1.3	30.8	64.4	264.4	157	6.06
0990	MW231	13/05/2024	0.57	31.4	60.6	260.6	161	6.03
0990	MW231	13/05/2024	1.46	32.2	67.9	267.9	172	6.18
0990	MW231	20/10/2024	1.8	31.3	40.3	240.3	226	6.29
0990	MW231	6/05/2025	0.91	31.7	1.7	201.7	215	6.08
0990	MW244	20/07/2017	0.1	31.0	-104.0	96.0	671	7.01
0990	MW244	25/09/2017	0.25	33.2	-103.0	97.0	816	6.93
0990	MW244	27/11/2017	0.42	31.2	-25.6	174.4	642	6.85
0990	MW244	27/03/2018	0.36	33.3	-119.1	80.9	529	6.47
0990	MW244	18/12/2018	2.54	32.1	-106.1	93.9	236	4.67
0990	MW244	23/04/2020	0.88	32.5	-77.3	122.7	1040	6.96
0990	MW244	21/04/2021	0.68	34.7	111.2	311.2	881	7.23
0990	MW244	9/10/2021	0.98	32.4	-109.9	90.1	795	7.64
0990	MW244	18/10/2022	1.37	31.3	-96.4	103.6	849	6.77
0990	MW244	26/09/2023	3.29	34.3	-	-	894	6.70
0990	MW244	13/05/2024	2.11	32.0	-47.6	152.4	459	6.27
0990	MW244	21/10/2024	1.65	30.4	-37.4	162.6	805	6.76
0990	MW244	7/05/2025	0.57	33.0	-63.5	136.5	525	6.69
0990	MW278	2/05/2017	2.94	34.4	206.5	406.5	182	6.23
0990	MW278	20/07/2017	3.49	32.5	100.9	300.9	195	6.36
0990	MW278	28/09/2017	2.64	31.9	109.3	309.3	268	6.60
0990	MW278	28/11/2017	1.87	30.4	103.3	303.3	247	6.57
0990	MW278	27/03/2018	3.66	31.6	121.2	321.2	168	6.11
0990	MW278	17/01/2019	4.21	31.5	81.5	281.5	192	7.67
0990	MW278	9/09/2019	4.09	33.6	72.1	272.1	333	6.51
0990	MW278	24/02/2020	4.06	34.7	-56.0	144.0	233	6.21
0990	MW278	23/04/2020	-	32.2	157.5	357.5	304	7.27
0990	MW278	21/10/2020	2.07	33.2	0.0	200.0	687	5.83
0990	MW278	23/02/2021	3	32.6	50.1	250.1	140	5.77
0990	MW278	19/04/2021	1.72	31.6	107.8	307.8	409	6.94
0990	MW278	7/06/2021	2.35	31.7	129.3	329.3	222	7.58
0990	MW278	8/10/2021	3.29	32.4	81.4	281.4	318	7.63
0990	MW278	29/03/2022	3.5	33.7	68.9	268.9	255	6.51
0990	MW278	18/10/2022	1.7	30.5	104.7	304.7	510	6.71
0990	MW278	28/02/2023	1.95	29.1	-	-	235	6.40
0990	MW278	26/09/2023	1.27	31.4	-	-	375	6.48
0990	MW278	13/02/2024	1.77	33.3	212.8	412.8	213	6.19
0990	MW278	13/05/2024	9.62	32.4	35.0	235.0	207	6.19
0990	MW278	22/10/2024	2.13	33.7	183.8	383.8	312	6.71
0990	MW278	20/03/2025	2.08	32.3	-38.3	161.7	208	6.33
0990	MW278	20/03/2025	-	-	-	-	-	-
0990	MW278	7/05/2025	1.98	32.2	127.2	327.2	228	6.48
0990	MW278		1.77	33.3	212.8	412.8	213	6.19
0990	MW285	20/07/2017	1.85	30.7	108.0	308.0	895	6.80
0990	MW285	28/09/2017	0.92	34.0	11.2	211.2	907	6.93
0990	MW285	28/11/2017	1.13	32.6	133.6	333.6	856	6.88
0990	MW285	29/01/2018	0.81	30.5	37.1	237.1	631	8.96
0990	MW285	27/03/2018	2	33.9	116.5	316.5	713	6.87
0990	MW285	18/12/2018	4.09	31.4	86.1	286.1	198	6.80
0990	MW285	10/09/2019	3.55	32.0	102.5	302.5	680	6.46
0990	MW285	24/02/2020	-	34.5	104.8	304.8	785	6.56
0990	MW285	23/04/2020	1.07	31.9	166.6	366.6	849	6.96
0990	MW285	19/04/2021	0.79	30.8	115.1	315.1	775	6.78
0990	MW285	7/10/2021	1.33	31.9	76.8	276.8	78	7.60
0990	MW285	18/10/2022	0.67	30.9	87.9	287.9	863	6.81
0990	MW285	26/09/2023	1.05	32.1	-	-	795	6.66
0990	MW285	13/05/2024	8.44	32.0	25.4	225.4	543	6.81
0990	MW285	22/10/2024	1.52	34.7	185.1	385.1	780	6.84
0990	MW285	7/05/2025	0.68	32.2	127.2	327.2	692	8.90
0990	MW301	11/09/2019	0.05	29.0	28.2	228.2	669	6.41
0990	MW400	14/05/2018	2.64	27.9	196.9	396.9	814	6.51

Table T1 b
Current and Historical Groudnwater Field Results
PFAS Ongoing Monitoring Report
Department of Defence - RAAF Base Tindal

Table T1b - Historical Groundwater Water Quality Parameters

Site	Location	Date	DO	Temp.	Redox Potential	Redox Potential Corrected	Electrical Conductivity	pH
			mg/L	°C	mV	mV	µS/cm	pH Units
0990	MW400	19/12/2018	1.55	30.5	-4.7	195.3	542	6.96
0990	MW400	24/04/2020	1.10	30.3	149.8	349.8	826	6.93
0990	MW400	20/04/2021	1.38	30.4	74.4	274.4	797	7.28
0990	MW400	9/10/2021	0.60	31.8	103.0	303.0	770	7.90
0990	MW400	19/10/2022	0.47	-	-45.1	154.9	831	7.36
0990	MW400	25/09/2023	0.75	30.9	-	-	816	7.15
0990	MW400	19/10/2024	1.92	32.3	154.7	354.7	812	6.21
0990	MW400	6/05/2025	1.10	30.2	-25.0	175.0	777	6.84
0990	MW403	23/09/2017	2.01	32.1	29.0	229.0	866	7.51
0990	MW403	26/11/2017	0.37	30.6	184.1	384.1	799	6.92
0990	MW403	20/04/2021	0.64	31.8	-40.1	159.9	1098	6.92
0990	MW403	9/10/2021	0.80	31.9	110.6	310.6	828	7.38
0990	MW403	27/09/2023	0.75	29.2	-	-	812	6.77
0990	MW403	14/05/2024	2.42	32.4	58.2	258.2	1144	6.77
0990	MW403	17/10/2024	2.45	32.9	77.6	277.6	1101	7.10
0990	MW406	26/09/2017	1.23	32.6	92.1	292.1	448	7.31
0990	MW406	16/03/2018	3.59	30.2	172.8	372.8	553	7.41
0990	MW406	2/07/2018	1.79	31.9	29.4	229.4	381	6.72
0990	MW406	3/07/2018	-	-	-	-	-	-
0990	MW406	16/09/2019	0.43	32.1	123.5	323.5	708	7.50
0990	MW406	3/12/2019	0.10	32.5	133.7	333.7	677	6.45
0990	MW406	23/04/2020	1.10	32.2	177.7	377.7	821	6.92
0990	MW406	25/03/2021	-	35.2	-22.6	177.4	289	7.25
0990	MW406	19/04/2021	1.07	29.3	107.6	307.6	743	7.55
0990	MW406	9/10/2021	1.26	32.2	81.0	281.0	569	7.68
0990	MW406	20/10/2022	1.24	32.7	87.0	287.0	811	6.89
0990	MW406	26/09/2023	1.28	30.7	-	-	626	6.75
0990	MW406	8/05/2024	1.25	31.7	74.1	274.1	737	6.69
0990	MW406	12/02/2025	2.17	32.0	44.3	244.3	253	7.46
0990	MW406	7/05/2025	0.48	32.9	-56.6	143.4	269	7.37
0990	MW732	12/05/2017	2.66	31.9	150.8	350.8	1004	6.88
0990	MW732	19/07/2017	0.43	30.7	-17.2	182.8	731	8.63
0990	MW732	26/09/2017	3.50	33.0	119.3	319.3	887	6.80
0990	MW732	27/11/2017	2.68	32.3	109.4	309.4	898	7.03
0990	MW732	21/04/2020	-	29.5	-121.0	79.0	598	6.93
0990	MW732	9/10/2021	1.00	31.8	-107.7	92.3	130	8.03
0990	MW732	25/09/2023	0.89	30.2	-	-	150	6.96
0990	MW801S	21/10/2022	1.27	30.7	-55.7	144.3	987	7.15
0990	MW801S	27/09/2023	1.32	29.2	-	-	1026	6.66
0990	MW801S	14/05/2024	2.03	29.2	-29.5	170.5	2132	6.77
0990	MW801S	18/10/2024	1.82	31.6	89.8	289.8	911	6.49
0990	MW801S	8/05/2025	1.71	27.3	93.1	293.1	827	6.84
0990	MW802D	20/10/2022	0.56	31.3	-118.4	81.6	226	6.89
0990	MW802D	26/09/2023	1.89	30.4	-	-	835	6.73
0990	MW802D	8/05/2024	2.19	32.1	92.8	292.8	842	6.71
0990	MW802D	19/10/2024	0.60	32.4	67.1	267.1	944	6.85
0990	MW802D	7/05/2025	0.96	32.1	-10.1	189.9	737	6.86
0990	MW802I	20/10/2022	1.55	31.9	115.1	315.1	1164	6.85
0990	MW802I	26/09/2023	1.09	31.3	-	-	848	6.66
0990	MW802I	8/05/2024	1.77	32.0	93.2	293.2	802	7.19
0990	MW802I	19/10/2024	0.75	32.4	158.5	358.5	1065	6.86
0990	MW802I	7/05/2025	0.56	32.0	61.1	261.1	763	6.89
0990	MW802S	20/10/2022	1.35	31.9	115.6	315.6	1170	6.89
0990	MW802S	26/09/2023	0.86	30.8	-	-	1328	7.33
0990	MW802S	8/05/2024	0.88	31.7	80.6	280.6	1234	7.46
0990	MW802S	19/10/2024	1.47	31.8	126.7	326.7	1577	7.23
0990	MW802S	7/05/2025	0.75	32.5	-99.8	100.2	847	7.26
0990	MW803D	21/10/2022	0.85	31.5	-	-	738	7.19
0990	MW803D	26/09/2023	0.51	30.9	-	-	582	8.15
0990	MW803D	13/05/2024	2.05	31.1	6.3	206.3	544	6.83
0990	MW803D	17/10/2024	1.49	32.6	28.4	228.4	548	6.77
0990	MW803D	6/05/2025	0.53	32.1	-93.7	106.3	505	6.95
0990	MW803I	21/10/2022	0.44	31.4	-115.6	84.4	2742	6.77
0990	MW803I	26/09/2023	0.97	30.8	-	-	1842	6.54
0990	MW803I	13/05/2024	1.27	30.8	-68.4	131.6	1572	6.53
0990	MW803I	17/10/2024	2.11	32.0	46.0	246.0	1358	6.53
0990	MW803I	6/05/2025	0.58	31.7	-140.3	59.7	1346	6.64
0990	MW803S	21/10/2022	1.30	31.7	-49.1	150.9	315	6.78

Table T1 b
Current and Historical Groudnwater Field Results
PFAS Ongoing Monitoring Report
Department of Defence - RAAF Base Tindal

Table T1b - Historical Groundwater Water Quality Parameters

Site	Location	Date	DO	Temp.	Redox Potential	Redox Potential Corrected	Electrical Conductivity	pH
			mg/L	°C	mV	mV	µS/cm	pH Units
0990	MW803S	26/09/2023	0.90	30.7	-	-	347	6.42
0990	MW803S	13/05/2024	1.31	31.3	27.4	227.4	325	6.38
0990	MW803S	17/10/2024	2.57	32.7	52.3	252.3	359	6.73
0990	MW803S	6/05/2025	0.56	31.4	-49.8	150.2	344	6.53
0990	MW814	6/05/2025	1.34	31.0	99.6	299.6	764	6.98
0990	MW815	6/05/2025	3.21	30.6	17.8	217.8	795	6.89
0990	OTH111	27/03/2018	2.99	32.1	105.5	305.5	855	6.77
0990	OTH111	18/12/2018	4.22	29.7	55.6	255.6	440	7.77
0990	OTH111	23/04/2020	1.88	32.7	113.9	313.9	826	6.91
0990	OTH111	21/04/2021	1.48	32.9	69.3	269.3	793	7.27
0990	OTH111	9/10/2021	3.45	31.7	61.4	261.4	474	8.23
0990	OTH111	18/10/2022	0.97	31.6	128.3	328.3	322	6.78
0990	OTH111	26/09/2023	2.84	32.0	-	-	494	7.71
0990	OTH111	18/10/2024	2.02	31.4	52.4	252.4	845	6.85
0990	OTH111	7/05/2025	1.96	30.3	135.2	335.2	584	6.95
0990	OTH112	26/09/2023	4.30	34.4	-	-	1021	6.70
0990	OTH112	23/10/2024	2.59	34.5	65.2	265.2	916	7.02
0990	OTH112	7/05/2025	1.02	28.1	144.2	344.2	902	6.84
0990	OTH113	18/09/2023	2.75	32.0	-	-	879	7.44
0990	OTH113	7/11/2024	1.71	42.5	59.7	259.7	911	5.62
0990	OTH113	2/05/2025	4.39	30.5	197.5	397.5	613	7.06
0990	OTH114	17/02/2020	-	-	-	-	-	-
0990	OTH114	20/07/2020	1.27	31.7	207.8	407.8	871	6.65
0990	OTH114	16/11/2020	1.18	33.2	182.0	382.0	962	6.94
0990	OTH114	2/02/2021	0.93	31.5	193.1	393.1	648	7.38
0990	OTH114	6/07/2021	0.89	29.5	97.6	297.6	816	7.00
0990	OTH114	15/03/2022	3.12	32.8	-137.9	62.1	950	7.70
0990	OTH114	15/03/2023	0.73	31.7	-	-	861	6.78
0990	OTH114	18/09/2023	3.57	34.5	-	-	780	7.12
0990	OTH114	30/10/2024	2.11	33.3	145.7	345.7	748	5.08
0990	OTH114	2/05/2025	2.18	28.6	193.7	393.7	608	6.86
0990	OTH115	18/09/2023	4.33	32.6	-	-	872	7.75
0990	OTH115	30/10/2024	1.61	32.3	146.5	346.5	726	5.35
0990	OTH115	6/05/2025	3.22	29.7	12.2	212.2	778	6.68
0990	OTH116	25/09/2023	3.59	29.9	-	-	842	7.34
0990	OTH117	30/11/2021	1.54	32.5	92.1	292.1	669	7.32
0990	OTH117	11/01/2022	2.59	39.7	80.2	280.2	989	7.85
0990	OTH117	16/02/2022	3.40	35.2	110.8	310.8	710	7.58
0990	OTH117	16/03/2022	4.70	28.8	-18.2	181.8	712	7.62
0990	OTH117	1/09/2022	3.76	23.7	45.1	245.1	679	7.32
0990	OTH117	17/11/2022	2.56	27.3	108.9	308.9	734	7.28
0990	OTH117	15/12/2022	2.11	29.4	63.3	263.3	687	7.33
0990	OTH117	18/01/2023	2.60	41.6	183.7	383.7	909	7.30
0990	OTH117	15/02/2023	2.30	43.8	-	-	915	7.43
0990	OTH117	15/03/2023	2.83	29.6	-	-	767	7.10
0990	OTH117	19/04/2023	0.42	27.6	-	-	729	7.51
0990	OTH117	24/08/2023	6.58	25.4	96.6	296.6	614	7.55
0990	OTH117	15/10/2024	3.74	29.8	93.0	293.0	747	7.20
0990	OTH117	12/11/2024	0.35	34.4	129.3	329.3	814	6.94
0990	OTH117	9/12/2024	1.74	41.6	137.8	337.8	810	7.16
0990	OTH117	13/01/2025	2.10	44.1	115.6	315.6	915	7.83
0990	OTH117	17/02/2025	-	33.2	135.0	335.0	773	7.38
0990	OTH117	17/03/2025	1.45	32.1	164.4	364.4	697	7.51
0990	OTH117	15/04/2025	3.74	37.0	68.2	268.2	829	6.02
0990	OTH118	1/12/2021	3.42	31.8	116.5	316.5	652	7.86
0990	OTH118	11/01/2022	3.95	35.0	97.3	297.3	848	7.14
0990	OTH118	17/02/2022	2.77	30.8	137.2	337.2	722	7.51
0990	OTH118	16/03/2022	3.21	30.2	-28.1	171.9	748	7.76
0990	OTH118	1/09/2022	3.46	30.9	34.1	234.1	781	7.15
0990	OTH118	16/11/2022	1.84	32.2	95.3	295.3	796	7.02
0990	OTH118	14/12/2022	2.05	31.0	6.9	206.9	692	7.33
0990	OTH118	18/01/2023	4.40	30.5	133.4	333.4	827	7.68
0990	OTH118	18/04/2023	2.42	37.4	-	-	821	7.38
0990	OTH118	21/06/2023	5.05	28.3	-	-	769	7.41
0990	OTH118	24/08/2023	3.90	34.6	72.2	272.2	577	7.67
0990	OTH118	16/10/2024	3.36	32.0	89.5	289.5	784	7.13
0990	OTH118	12/11/2024	0.87	34.0	66.1	266.1	797	6.88
0990	OTH118	11/12/2024	2.48	31.3	119.6	319.6	737	7.04

Table T1b - Historical Groundwater Water Quality Parameters

Site	Location	Date	DO	Temp.	Redox Potential	Redox Potential Corrected	Electrical Conductivity	pH
			mg/L	°C	mV	mV	µS/cm	pH Units
0990	OTH118	14/01/2025	3.02	30.6	126.1	326.1	752	7.53
0990	OTH118	18/02/2025	-	30.9	123.7	323.7	829	7.36
0990	OTH118	18/03/2025	1.29	31.1	146.8	346.8	666	7.48
0990	OTH118	14/04/2025	1.53	30.4	72.7	272.7	759	7.02
0990	OTH119	1/12/2021	0.86	32.0	115.7	315.7	703	7.36
0990	OTH119	11/01/2022	1.32	35.5	58.8	258.8	494	7.97
0990	OTH119	17/02/2022	2.17	28.1	130.6	330.6	726	7.67
0990	OTH119	15/03/2022	2.79	36.2	-8.7	191.3	908	7.04
0990	OTH119	31/08/2022	1.99	30.4	218.2	418.2	812	7.05
0990	OTH119	16/11/2022	1.25	31.4	103.2	303.2	839	6.91
0990	OTH119	14/12/2022	1.91	35.1	108.3	308.3	791	7.01
0990	OTH119	18/01/2023	1.72	30.2	164.7	364.7	834	6.91
0990	OTH119	15/03/2023	2.82	34.8	-	-	3	7.07
0990	OTH119	15/03/2023	2.10	31.3	-	-	1180	6.85
0990	OTH119	19/04/2023	5.89	20.1	-	-	783	7.07
0990	OTH119	22/08/2023	1.78	30.2	95.0	295.0	713	6.64
0990	OTH119	15/10/2024	3.96	33.0	97.6	297.6	894	7.17
0990	OTH119	11/11/2024	0.73	31.4	57.6	257.6	898	6.81
0990	OTH119	9/12/2024	2.71	30.5	83.8	283.8	837	7.58
0990	OTH119	13/01/2025	3.70	33.8	68.4	268.4	957	7.60
0990	OTH119	17/02/2025	-	31.3	94.7	294.7	868	7.32
0990	OTH119	17/03/2025	1.46	30.7	221.5	421.5	993	7.24
0990	OTH119	15/04/2025	3.21	30.6	69.0	269.0	1126	5.98
0990	OTH120	15/03/2023	2.43	32.7	-	-	302	7.59
0990	OTH120	15/03/2023	2.43	32.7	-	-	302	7.59
0990	OTH120	18/09/2023	2.70	31.4	-	-	848	7.51
0990	OTH120	30/10/2024	5.57	32.0	121.4	321.4	682	5.39
0990	OTH120	2/05/2025	4.06	28.5	173.7	373.7	928	7.42
0990	OTH123	19/07/2017	3.10	33.5	120.1	320.1	943	6.90
0990	POT111	18/09/2023	2.43	38.2	-	-	963	7.65
0990	POT111	30/10/2024	5.34	36.1	99.4	299.4	744	5.39
0990	POT111	7/05/2025	7.72	29.6	90.8	290.8	716	7.16
0990	POT112	30/10/2019	4.37	25.8	87.0	287.0	731	7.12
0990	POT112	20/07/2020	2.05	29.9	145.3	345.3	873	6.87
0990	POT112	16/11/2020	1.28	31.2	159.8	359.8	877	7.19
0990	POT112	10/12/2020	0.63	32.0	-56.8	143.2	664	7.08
0990	POT112	1/02/2021	1.40	31.6	151.9	351.9	857	8.27
0990	POT112	6/07/2021	2.04	28.9	68.0	268.0	758	7.36
0990	POT112	30/11/2021	2.69	37.0	95.5	295.5	739	7.65
0990	POT112	11/01/2022	2.16	38.1	96.1	296.1	972	7.93
0990	POT112	16/02/2022	3.89	39.1	109.3	309.3	991	7.39
0990	POT112	15/03/2022	1.72	32.1	-65.4	134.6	781	8.05
0990	POT112	31/08/2022	1.22	31.9	120.1	320.1	857	7.01
0990	POT112	16/11/2022	1.67	34.2	85.2	285.2	859	6.86
0990	POT112	14/12/2022	1.21	36.4	108.3	308.3	802	6.85
0990	POT112	18/01/2023	3.10	30.2	88.1	288.1	751	6.82
0990	POT112	15/02/2023	0.91	38.8	-	-	905	6.82
0990	POT112	15/03/2023	1.82	32.0	-	-	1155	6.91
0990	POT112	19/04/2023	0.18	29.3	-	-	847	6.92
0990	POT112	21/06/2023	6.84	36.0	-	-	967	6.89
0990	POT112	23/08/2023	6.34	25.2	105.8	305.8	623	7.13
0990	POT112	15/10/2024	2.94	30.4	93.3	293.3	774	6.76
0990	POT112	11/11/2024	0.64	38.7	70.6	270.6	803	6.75
0990	POT112	9/12/2024	1.81	37.0	73.8	273.8	889	7.26
0990	POT112	13/01/2025	2.58	33.4	60.8	260.8	850	7.59
0990	POT112	17/02/2025	-	33.4	91.1	291.1	998	7.44
0990	POT112	17/03/2025	2.81	34.2	230.4	430.4	883	7.08
0990	POT112	15/04/2025	2.15	31.7	64.7	264.7	895	7.02
0990	POT113	30/10/2019	2.58	30.9	83.1	283.1	801	6.99
0990	POT113	20/07/2020	3.04	30.5	229.2	429.2	808	6.82
0990	POT113	16/11/2020	2.30	32.2	162.6	362.6	898	7.11
0990	POT113	1/02/2021	2.29	30.5	125.9	325.9	1214	8.20
0990	POT113	6/07/2021	2.32	27.0	69.1	269.1	790	7.62
0990	POT113	30/11/2021	1.84	31.7	62.0	262.0	707	7.19
0990	POT113	11/01/2022	1.41	31.9	82.0	282.0	979	8.27
0990	POT113	16/02/2022	2.19	32.6	119.8	319.8	1407	7.38
0990	POT113	15/03/2022	3.40	31.1	-74.2	125.8	1085	7.92
0990	POT113	31/08/2022	1.62	31.1	130.2	330.2	943	6.97

Table T1b - Historical Groundwater Water Quality Parameters

Site	Location	Date	DO	Temp.	Redox Potential	Redox Potential Corrected	Electrical Conductivity	pH
			mg/L	°C	mV	mV	µS/cm	pH Units
0990	POT113	16/11/2022	1.69	31.8	96.2	296.2	861	6.78
0990	POT113	14/12/2022	1.90	31.8	101.2	301.2	730	6.82
0990	POT113	18/01/2023	1.85	31.0	104.0	304.0	1084	6.82
0990	POT113	15/02/2023	2.05	32.7	-	-	1086	6.87
0990	POT113	15/03/2023	6.97	30.8	-	-	1102	6.97
0990	POT113	19/04/2023	0.43	29.0	-	-	1070	6.89
0990	POT113	21/06/2023	1.42	30.8	-	-	927	6.82
0990	POT113	23/08/2023	2.63	29.7	96.8	296.8	680	6.96
0990	POT113	15/10/2024	3.39	31.1	95.0	295.0	832	6.87
0990	POT113	13/11/2024	0.89	32.6	74.3	274.3	821	6.81
0990	POT113	9/12/2024	3.75	30.9	123.0	323.0	784	7.09
0990	POT113	13/01/2025	1.77	31.7	58.7	258.7	89	7.78
0990	POT113	17/02/2025	-	31.2	77.8	277.8	811	7.49
0990	POT113	17/03/2025	2.39	31.4	154.3	354.3	814	7.43
0990	POT113	15/04/2025	2.84	31.0	46.9	246.9	1050	6.99
0990	POT114	30/10/2019	1.29	31.7	99.2	299.2	823	6.90
0990	POT114	20/07/2020	3.96	29.1	193.7	393.7	773	6.95
0990	POT114	16/11/2020	1.78	32.0	204.7	404.7	889	7.25
0990	POT114	1/02/2021	1.89	31.3	175.5	375.5	830	7.68
0990	POT114	6/07/2021	1.70	29.9	80.5	280.5	705	7.34
0990	POT114	30/11/2021	1.75	33.7	108.9	308.9	667	7.69
0990	POT114	11/01/2022	1.79	33.3	91.1	291.1	868	7.63
0990	POT114	17/02/2022	4.20	34.9	110.2	310.2	748	7.70
0990	POT114	15/03/2022	2.58	30.4	-56.6	143.4	727	7.98
0990	POT114	1/09/2022	5.07	31.0	89.7	289.7	795	7.15
0990	POT114	16/11/2022	1.17	33.9	120.2	320.2	856	6.92
0990	POT114	15/02/2023	2.80	30.4	-	-	3	7.10
0990	POT114	15/03/2023	0.88	30.5	-	-	815	6.95
0990	POT114	18/04/2023	0.67	29.0	-	-	774	6.90
0990	POT114	23/08/2023	2.20	29.6	84.1	284.1	689	7.11
0990	POT114	30/10/2024	3.03	33.4	113.8	313.8	725	5.32
0990	POT114	12/11/2024	0.55	32.7	63.0	263.0	769	6.90
0990	POT114	11/12/2024	1.72	29.5	114.1	314.1	726	7.21
0990	POT114	14/01/2025	1.68	28.7	128.8	328.8	722	7.67
0990	POT114	17/02/2025	-	29.2	106.1	306.1	726	7.57
0990	POT114	17/03/2025	1.32	32.2	169.8	369.8	682	7.40
0990	POT114	15/04/2025	1.43	33.0	58.2	258.2	780	7.07
0990	POT120	30/10/2019	5.81	17.7	86.7	286.7	596	6.97
0990	POT120	20/07/2020	5.71	28.4	-175.1	24.9	756	7.13
0990	POT120	16/11/2020	1.85	32.4	190.6	390.6	892	7.27
0990	POT120	1/02/2021	2.04	31.6	172.2	372.2	1048	7.75
0990	POT120	6/07/2021	1.56	29.8	79.0	279.0	770	7.32
0990	POT120	30/11/2021	2.99	34.4	99.1	299.1	696	7.54
0990	POT120	11/01/2022	1.12	34.1	77.0	277.0	877	8.04
0990	POT120	16/02/2022	4.49	32.3	99.9	299.9	766	8.29
0990	POT120	15/03/2022	3.26	32.7	-67.2	132.8	779	7.90
0990	POT120	31/08/2022	3.04	33.9	29.2	229.2	836	7.38
0990	POT120	16/11/2022	1.99	35.0	114.9	314.9	847	7.31
0990	POT120	14/12/2022	1.98	36.6	105.2	305.2	8	7.23
0990	POT120	18/01/2023	4.80	31.7	152.1	352.1	792	7.29
0990	POT120	15/02/2023	3.40	33.5	-	-	767	7.21
0990	POT120	15/02/2023	3.40	33.5	-	-	767	7.21
0990	POT120	15/03/2023	3.68	35.5	-	-	937	7.36
0990	POT120	18/04/2023	0.52	26.6	-	-	711	7.41
0990	POT120	26/07/2023	4.85	24.9	-	-	622	7.46
0990	POT120	22/08/2023	3.84	31.8	73.1	273.1	723	7.20
0990	POT120	30/10/2024	5.34	34.1	167.4	367.4	691	5.57
0990	POT120	12/11/2024	5.52	33.0	56.3	256.3	754	7.03
0990	POT120	9/12/2024	4.90	32.0	79.7	279.7	755	7.37
0990	POT120	14/01/2025	6.14	27.1	120.6	320.6	654	7.68
0990	POT120	17/02/2025	-	34.9	117.4	317.4	900	7.70
0990	POT120	17/03/2025	3.30	32.9	164.3	364.3	702	7.59
0990	POT120	14/04/2025	3.45	32.9	98.6	298.6	789	7.59
0990	POT121	30/10/2019	3.86	28.5	106.4	306.4	739	7.30
0990	POT121	20/07/2020	3.94	26.3	169.0	369.0	727	7.02
0990	POT121	16/11/2020	3.59	33.4	103.7	303.7	891	7.46
0990	POT121	2/02/2021	4.32	26.3	169.0	369.0	824	7.02
0990	POT121	6/07/2021	3.33	28.6	68.7	268.7	748	7.62

Table T1b - Historical Groundwater Water Quality Parameters

Site	Location	Date	DO	Temp.	Redox Potential	Redox Potential Corrected	Electrical Conductivity	pH
			mg/L	°C	mV	mV	µS/cm	pH Units
0990	POT121	15/02/2023	3.88	29.8	-	-	677	7.51
0990	POT121	16/03/2023	4.39	27.9	-	-	785	7.39
0990	POT121	19/04/2023	0.51	24.6	-	-	686	7.67
0990	POT121	23/08/2023	4.98	27.0	84.1	284.1	634	7.39
0990	POT121	16/10/2024	4.18	30.3	96.6	296.6	744	7.74
0990	POT121	12/11/2024	0.94	32.5	88.6	288.6	706	7.33
0990	POT121	9/12/2024	6.75	29.5	71.9	271.9	696	7.25
0990	POT121	13/01/2025	4.24	32.5	95.7	295.7	757	7.77
0990	POT121	18/02/2025	-	26.2	108.8	308.8	632	7.46
0990	POT121	18/03/2025	3.62	28.6	118.0	318.0	627	7.44
0990	POT121	14/04/2025	4.48	25.4	41.0	241.0	646	7.46
0990	POT122	30/10/2019	4.23	27.7	62.7	262.7	789	7.35
0990	POT122	20/07/2020	4.91	29.4	192.9	392.9	836	6.92
0990	POT122	16/11/2020	3.38	31.0	186.7	386.7	925	7.28
0990	POT122	2/02/2021	3.02	30.6	124.4	324.4	823	7.67
0990	POT122	6/07/2021	3.20	27.0	91.7	291.7	813	7.33
0990	POT122	30/11/2021	2.25	34.7	107.3	307.3	774	7.80
0990	POT122	11/01/2022	2.50	32.9	97.4	297.4	929	7.81
0990	POT124	30/11/2021	1.46	30.0	68.5	268.5	634	8.02
0990	POT124	11/01/2022	2.00	29.0	111.9	311.9	773	7.09
0990	POT124	17/02/2022	1.60	26.8	102.5	302.5	660	7.42
0990	POT124	16/03/2022	2.01	28.9	-23.0	177.0	729	7.46
0990	POT124	1/09/2022	3.62	29.1	30.6	230.6	778	6.88
0990	POT124	17/11/2022	1.26	29.6	115.7	315.7	771	6.92
0990	POT124	15/12/2022	1.84	29.7	76.3	276.3	696	6.95
0990	POT124	18/01/2023	2.10	30.6	152.6	352.6	759	6.97
0990	POT124	15/02/2023	1.80	31.6	-	-	746	7.04
0990	POT124	15/02/2023	1.80	31.6	-	-	746	7.04
0990	POT124	15/03/2023	0.74	31.0	-	-	813	6.90
0990	POT124	18/04/2023	0.65	30.1	-	-	747	6.82
0990	POT124	21/06/2023	4.21	35.4	-	-	881	6.90
0990	POT124	24/08/2023	4.34	28.5	97.1	297.1	702	6.79
0990	POT124	17/10/2024	3.33	29.7	142.3	342.3	715	5.92
0990	POT124	12/11/2024	0.94	32.1	75.1	275.1	761	7.45
0990	POT124	11/12/2024	3.39	30.4	110.7	310.7	790	7.52
0990	POT124	14/01/2025	2.72	30.7	128.4	328.4	768	7.59
0990	POT124	17/02/2025	-	30.7	100.2	300.2	733	7.64
0990	POT124	17/03/2025	1.56	30.8	169.0	369.0	747	7.45
0990	POT124	15/04/2025	3.65	30.7	62.4	262.4	836	7.08
0990	POT125	1/12/2021	2.86	32.7	66.6	266.6	629	7.83
0990	POT125	12/01/2022	4.44	24.7	108.4	308.4	679	7.12
0990	POT125	17/02/2022	2.40	28.2	121.1	321.1	789	7.52
0990	POT125	16/03/2022	6.47	29.8	-50.0	150.0	1431	7.48
0990	POT125	31/08/2022	2.85	31.5	99.6	299.6	774	7.42
0990	POT125	16/11/2022	1.55	39.0	106.2	306.2	663	7.76
0990	POT125	14/12/2022	2.03	32.1	91.8	291.8	703	7.32
0990	POT125	18/01/2023	2.14	43.4	175.6	375.6	779	7.68
0990	POT125	15/02/2023	2.24	44.9	-	-	815	7.45
0990	POT125	15/02/2023	2.24	44.9	-	-	815	7.45
0990	POT125	15/03/2023	3.59	36.4	-	-	941	7.65
0990	POT125	15/03/2023	3.59	36.4	-	-	941	7.65
0990	POT125	19/04/2023	0.43	24.6	-	-	642	7.42
0990	POT125	22/08/2023	2.44	31.7	79.2	279.2	680	6.85
0990	POT125	24/08/2023	3.03	28.4	88.3	288.3	628	7.04
0990	POT125	24/08/2023	3.03	28.4	88.3	288.3	628	7.04
0990	POT125	16/10/2024	4.52	30.9	103.5	303.5	758	7.76
0990	POT125	12/11/2024	0.65	42.9	42.3	242.3	665	7.44
0990	POT125	9/12/2024	7.02	31.7	121.6	321.6	723	7.07
0990	POT125	17/02/2025	-	31.1	123.1	323.1	713	7.39
0990	POT125	17/03/2025	3.49	33.1	151.5	351.5	684	7.44
0990	POT125	14/04/2025	5.48	30.9	51.0	251.0	712	7.68
0990	POT126	1/12/2021	1.44	33.2	92.3	292.3	653	7.72
0990	POT126	12/01/2022	2.49	29.5	121.7	321.7	743	7.14
0990	POT126	17/02/2022	1.58	30.4	125.7	325.7	683	7.43
0990	POT126	16/03/2022	3.19	31.6	40.2	240.2	734	7.79
0990	POT126	31/08/2022	3.68	32.4	154.3	354.3	793	7.04
0990	POT126	16/11/2022	1.99	32.1	102.9	302.9	777	7.06
0990	POT126	14/12/2022	1.57	34.4	90.5	290.5	736	6.88

Table T1b - Historical Groundwater Water Quality Parameters

Site	Location	Date	DO	Temp.	Redox Potential	Redox Potential Corrected	Electrical Conductivity	pH
			mg/L	°C	mV	mV	µS/cm	pH Units
0990	POT126	18/01/2023	2.30	41.3	192.1	392.1	513	7.81
0990	POT126	18/01/2023	2.30	41.3	192.1	392.1	513	7.81
0990	POT126	15/02/2023	1.49	36.4	-	-	789	6.88
0990	POT126	15/03/2023	2.00	33.1	-	-	746	6.95
0990	POT126	19/04/2023	0.19	29.6	-	-	721	6.89
0990	POT126	15/10/2024	3.56	32.3	94.8	294.8	780	7.19
0990	POT126	12/11/2024	0.54	32.4	93.0	293.0	710	7.04
0990	POT126	9/12/2024	2.60	34.9	119.2	319.2	772	7.49
0990	POT126	13/01/2025	2.51	32.0	91.0	291.0	749	7.76
0990	POT126	17/02/2025	-	32.1	95.0	295.0	732	7.59
0990	POT126	17/03/2025	1.47	32.0	183.4	383.4	686	7.47
0990	POT126	15/04/2025	2.37	33.1	55.6	255.6	446	7.16
0990	POT127	1/12/2021	2.00	38.0	120.3	320.3	724	8.10
0990	POT127	11/01/2022	1.01	36.3	107.7	307.7	895	7.24
0990	POT127	17/02/2022	3.96	30.2	133.5	333.5	651	7.92

Table T1b - Historical Groundwater Water Quality Parameters

Site	Location	Date	DO	Temp.	Redox Potential	Redox Potential Corrected	Electrical Conductivity	pH
			mg/L	°C	mV	mV	µS/cm	pH Units
0990	POT127	16/03/2022	3.97	27.0	-2.7	197.3	649	7.49
0990	POT127	1/09/2022	2.62	34.4	11.2	211.2	817	7.13
0990	POT127	16/11/2022	1.10	34.3	117.0	317.0	814	7.08
0990	POT127	14/12/2022	1.26	31.9	90.3	290.3	685	7.22
0990	POT127	18/01/2023	3.43	29.5	136.6	336.6	588	7.69
0990	POT127	15/02/2023	3.21	36.8	-	-	461	7.97
0990	POT127	18/04/2023	3.04	29.1	-	-	728	7.05
0990	POT127	21/06/2023	3.97	30.2	-	-	807	7.32
0990	POT127	24/08/2023	1.61	32.2	89.3	289.3	694	7.01
0990	POT127	16/10/2024	2.29	48.7	85.5	285.5	1027	7.15
0990	POT127	12/11/2024	0.69	40.2	62.3	262.3	813	7.20
0990	POT127	11/12/2024	2.90	30.0	117.8	317.8	708	7.26
0990	POT127	14/01/2025	1.48	28.6	122.4	322.4	704	7.71
0990	POT127	18/02/2025	-	26.7	118.5	318.5	674	7.61
0990	POT127	18/03/2025	0.72	29.7	145.9	345.9	645	7.45
0990	POT127	14/04/2025	8.81	25.4	44.2	244.2	134	8.34
0990	POT128	1/12/2021	1.66	33.3	130.1	330.1	680	7.60
0990	POT128	11/01/2022	1.64	34.4	87.8	287.8	857	7.39
0990	POT128	17/02/2022	2.45	28.6	111.6	311.6	773	7.41
0990	POT128	15/03/2022	4.02	31.5	9.1	209.1	940	7.46
0990	POT128	31/08/2022	3.42	31.6	100.2	300.2	795	7.03
0990	POT128	16/11/2022	1.31	31.9	99.9	299.9	803	6.87
0990	POT128	14/12/2022	1.79	32.1	106.1	306.1	722	6.82
0990	POT128	18/01/2023	2.30	31.4	102.1	302.1	772	6.92
0990	POT128	18/01/2023	2.30	31.4	102.1	302.1	772	6.92
0990	POT128	15/02/2023	1.60	37.6	-	-	905	6.89
0990	POT128	19/04/2023	2.59	26.4	-	-	805	6.97
0990	POT128	23/08/2023	3.28	32.8	82.4	282.4	728	6.80
0990	POT128	15/10/2024	4.16	30.6	91.4	291.4	752	7.30
0990	POT128	11/11/2024	0.73	33.1	76.1	276.1	779	6.94
0990	POT128	9/12/2024	2.81	31.7	75.3	275.3	753	7.29
0990	POT128	13/01/2025	2.59	31.5	53.6	253.6	787	7.84
0990	POT128	17/02/2025	-	31.2	76.5	276.5	1052	7.44
0990	POT128	17/03/2025	2.15	31.2	169.9	369.9	864	7.22
0990	POT128	15/04/2025	3.07	31.1	48.9	248.9	929	7.06
0990	POT129	11/01/2022	1.74	40.4	83.4	283.4	1038	7.68
0990	POT129	16/02/2022	2.03	33.7	135.7	335.7	801	7.48
0990	POT129	15/03/2022	2.76	36.2	-39.8	160.2	820	7.38
0990	POT129	31/08/2022	3.30	30.6	107.2	307.2	790	7.09
0990	POT129	16/11/2022	1.86	33.7	92.6	292.6	829	6.95
0990	POT129	14/12/2022	1.74	38.4	109.2	309.2	799	6.87
0990	POT129	15/02/2023	2.26	37.4	-	-	825	6.97
0990	POT129	15/03/2023	2.39	28.8	-	-	745	6.97
0990	POT129	19/04/2023	0.45	22.7	-	-	641	7.10
0990	POT129	22/08/2023	2.73	36.7	88.4	288.4	769	6.91
0990	POT129	15/10/2024	4.22	30.7	94.2	294.2	764	7.28
0990	POT129	11/11/2024	1.12	32.8	68.5	268.5	756	7.10
0990	POT129	9/12/2024	6.55	29.9	95.0	295.0	712	7.80
0990	POT129	13/01/2025	6.31	30.5	57.0	257.0	736	7.86
0990	POT129	17/02/2025	-	28.0	86.0	286.0	696	7.54
0990	POT129	17/03/2025	3.18	30.0	154.0	354.0	669	7.42
0990	POT129	15/04/2025	4.68	29.2	71.3	271.3	310	7.23
0990	POT130	16/02/2022	3.55	28.9	127.1	327.1	715	7.46
0990	POT130	9/08/2023	4.01	33.2	98.2	298.2	8428	6.92
0990	POT130	16/10/2024	4.04	30.3	82.6	282.6	756	7.41
0990	POT130	12/11/2024	1.46	42.4	55.3	255.3	755	6.99
0990	POT130	11/12/2024	3.77	30.7	85.8	285.8	749	7.21
0990	POT130	14/01/2025	5.04	29.9	110.6	310.6	747	7.74
0990	POT130	18/02/2025	-	30.2	104.6	304.6	703	7.51
0990	POT130	18/03/2025	2.68	29.9	133.8	333.8	684	7.36
0990	POT130	14/04/2025	3.63	30.2	19.6	219.6	753	7.14
0990	POT131	21/06/2023	4.02	30.2	-	-	772	7.38
0990	POT131	23/08/2023	2.09	37.3	85.8	285.8	721	7.15
0990	POT131	15/10/2024	3.50	37.5	92.4	292.4	735	7.67
0990	POT131	12/11/2024	1.07	33.2	66.5	266.5	709	7.72
0990	POT131	9/12/2024	4.92	41.0	114.2	314.2	597	7.23
0990	POT131	14/01/2025	4.86	27.4	113.2	313.2	509	7.32
0990	POT131	17/02/2025	-	41.8	100.4	300.4	496	7.48

Table T1b - Historical Groundwater Water Quality Parameters

Site	Location	Date	DO	Temp.	Redox Potential	Redox Potential Corrected	Electrical Conductivity	pH
			mg/L	°C	mV	mV	µS/cm	pH Units
0990	POT131	17/03/2025	3.05	36.8	167.0	367.0	509	7.50
0990	POT131	30/04/2025	2.06	27.3	70.9	270.9	659	7.60
0990	POT198	22/08/2023	5.09	28.8	89.6	289.6	689	6.84
0990	POT198	16/10/2024	4.40	30.2	96.4	296.4	798	7.03
0990	POT198	12/11/2024	0.59	32.3	92.7	292.7	773	6.90
0990	POT198	9/12/2024	1.70	29.9	93.5	293.5	757	7.25
0990	POT198	14/01/2025	4.32	28.7	124.3	324.3	745	7.64
0990	POT198	18/03/2025	0.47	29.2	134.2	334.2	679	7.39
0990	POT198	15/04/2025	2.77	37.9	41.7	241.7	883	7.09
0990	POT201	22/08/2023	3.75	30.1	76.3	276.3	8	7.11
0990	POT201	22/08/2023	3.75	30.1	76.3	276.3	8	7.11
0990	POT201	16/10/2024	3.51	30.8	93.8	293.8	798	7.39
0990	POT201	12/11/2024	1.04	35.4	75.3	275.3	783	7.47
0990	POT201	11/12/2024	4.39	32.3	96.8	296.8	792	7.25
0990	POT201	14/01/2025	1.93	27.2	125.2	325.2	725	7.66
0990	POT201	18/02/2025	-	33.2	139.7	339.7	796	7.43
0990	POT201	18/03/2025	1.30	30.5	122.4	322.4	685	7.38

Table T2
Current and Historical Groundwater Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T2 - Current and Historical Groundwater Analytical Results

					PFAS					PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids											PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexadecanoic acid (PFHxDA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.001	0.0001	0.001	0.001	0.002	0.01	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.001	0.001	0.001	0.002	0.005	0.002	0.005	0.005	0.002	0.005
Human Health Receptors																																			
PFAS in Drinking Water (ADWG 2025)					0.2	0.008	0.03				1																								
PFAS NEMP 2025 Recreational water quality guideline					10	2	2	2																											
Ecological Receptors																																			
PFAS NEMP 2025 Freshwater 99%					19	0.00023																													
Location Code	Category	Date	Field ID	Lab Report Number																															
MW104	Historical	25 Sep 2017	0990_MW104_170925	565353	47	540	300	840	1,248.1	-	59	52	23	<0.2	-	23	33	150	19	0.60	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	1.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW104	Historical	27 Nov 2017	0990_MW104_171127	574954	31	580	210	790	1,096.64	-	44	38	25	<0.01	-	16	26	110	15	0.44	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.2	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW104	Historical	16 Mar 2018	0990_MW104_180316	590120	62	1,600	480	2,080	2,661.52	-	73	78	58	<0.2	-	31	53	200	24	0.72	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	1.8	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW104	Historical	10 Apr 2018	0990_MW104A_180410	593475	0.33	4.2	8.8	13	17.48	-	0.95	0.91	0.37	<0.01	-	0.15	0.24	1.3	0.16	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.07	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW104	Historical	10 Apr 2018	0990_MW104B_180410	593475	0.49	10	4.0	14	19.04	-	0.69	0.66	0.51	<0.01	-	0.24	0.38	1.8	0.27	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW104	Historical	10 Apr 2018	0990_MW104C_180410	593475	0.52	9.5	4.2	13.7	18.78	-	0.69	0.65	0.52	<0.01	-	0.24	0.40	1.8	0.26	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW104	Historical	28 Jun 2018	0990_MW104_180627	605350	60	1,400	300	1,700	2,187.22	-	55	65	51	<0.2	-	22	37	170	23	1.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	2.2	0.62	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW104	Historical	29 Nov 2018	0990_MW104_181129	ES1836471	9.77	182	57.2	239	317	-	11.0	8.86	7.41	<0.02	-	0.8	7.10	26.7	5.30	0.28	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.47	0.11	<0.05	0.03	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW104	Historical	19 Dec 2018	0990_MW104_181219	634367	9.5	220	66	286	387.7	-	11	8.3	7.4	<2	-	4.9	7.3	47	4.3	<2	<2	<2	<2	<2	<2	<2	2.0	<2	<2	<2	<2	<2	<2	<2	<2	<2
MW104	Historical	15 Mar 2019	0990_MW104_190315	ES1908082	26.4	722	117	839	1,040	-	28.4	25.5	24.1	0.09	-	2.0	15.5	67.0	12.6	0.72	0.06	<0.02	<0.02	<0.02	<0.05	<0.05	1.00	0.35	<0.05	0.03	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW104	Historical	19 Jun 2019	0990_MW104_190619	ES1919396	8.98	197	63.4	260	342	-	12.3	10.2	7.88	<0.02	-	2.9	5.60	29.1	3.89	0.18	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.33	0.08	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW104	Historical	17 Sep 2019	0990_MW104_190917	ES1930405	4.61	145	44.1	189	242	-	8.53	7.25	5.91	<0.02	-	1.2	3.16	19.9	2.58	0.10	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.20	0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW104	Historical	04 Dec 2019	0990_MW104_191204	ES1940423	3.03	83.0	24.5	108	139	-	4.34	3.92	4.36	<0.02	-	1.6	2.24	10.3	1.38	0.07	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.13	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW104	Historical	23 Apr 2020	0990_MW104_200423	ES2014306	2.04	53.5	12.6	66.1	83.7	-	2.32	2.61	1.81	<0.02	-	0.8	1.25	5.81	0.86	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.08	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW104	Historical	18 Nov 2020	0990_MW104_11_201118	ES2041128	1.56	36.0	6.67	42.7	53.4	-	1.62	1.12	1.47	<0.02	-	0.5	0.88	2.99	0.50	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW104	Historical	18 Nov 2020	0990_MW104_15_201118	ES2041128	1.25	25.2	5.29	30.5	40.2	-	1.65	1.11	1.02	<0.02	-	0.5	0.86	2.78	0.51	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW104	Historical	18 Nov 2020	0990_MW104_19_201118	ES2041128	1.32	21.4	4.51	25.9	36.2	-	1.66	1.23	1.06	<0.02	-	0.5	0.88	3.02	0.55	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW104	Historical	26 Mar 2021	0990_MW104_5.0_210326	785172	180	3,600	1,100	4,700	6,447.69	89	270	230	220	<0.1	-	95	110	480	68	1.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	3.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
MW104	Historical	26 Mar 2021	0990_MW104_10.0_210326	785172	72	1,900	540	2,440	3,284.59	51	120	120	96	<0.1	-	53	61	230	38	0.89	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	2.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
MW104	Historical	26 Mar 2021	0990_MW104_15.0_210326	785172	75	1,700	360	2,060	2,743.37	36	88	81	79	<0.1	-	38	41	210	31	0.78	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	2.3	0.19	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
MW104	Historical	26 Mar 2021	0990_MW104_20.0_210326	785172	67	2,200	340	2,540	3,116.51	29	69	68	61	<0.1	-	33	39	180	27	0.79	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.9	0.53	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
MW104	Historical	21 Apr 2021	0990_MW104_210421	ES2115517	124	2,050	938	2,990	4,270	-	192	173	119	<0.42	-	70.4	94.9	440	60.4	1.67	<0.42	<0.42	<0.42	<0.42	<1.04	<0.42	4.75	<0.42	<0.42	<0.42	<0.42	<1.04	<0.42	<1.04	<0.42	<1.04
MW104	Historical	08 Jun 2021	0990_MW104_210608	ES2121611	19.6	322	119	441	618	-	26.4	24.8	17.8	<0.02	-	10.8	14.1	54.8	8.28	0.25	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.65	0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW104	Historical	09 Oct 2021	0990_MW104_211009	ES2136989	1.74	43.8	11.7	55.5	71.9	-	2.34	2.32	1.78	<0.02	-	0.9	1.24	5.24	0.78	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.06	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW104	Historical	21 Oct 2022	0990_MW104_221021	ES2238126	0.30	6.45	2.39	8.84	11.9	-	0.42	0.41	0.27	<0.02	-	0.3	0.24	0.99	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW104	Historical	03 Apr 2023	0990_MW104_230403	ES2311391	58.0	837	392	1,230	1,740	-	75.4	69.8	39.2	<0.02	-	36.9	44.3	162	24.2	0.72	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	2.20	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW104	Historical	25 Sep 2023	0990_MW104_230925	ES2333198	0.24	3.74	1.78	5.52	7.96	-	0.39	0.28	0.20	<0.02	-	0.2	0.21	0.82	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW104	Historical	13 May 2024	0990_MW104_240513	ES2416309	124	2,110	616	2,730	3,800	-	118	131	99.6	<0.02	-	54.6	83.6	346	53.6	3.52	0.08	<0.02	<0.02	<0.02	<0.05	<0.05	3.19	0.14	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW104	Dry Season	17 Oct 2024	0990_MW104_241017	ES2435779	2.96	53.9	14.4	68.3	91.8	-	3.12	2.64	1.73	<0.05	-	1.2	1.52	7.87	1.13	0.07	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12
MW104	End of Wet	06 May 2025	0990_MW104_250506	ES2513390	1.61	31.6	9.06	40.7	55.7	-	1.79	1.88	1.22	<0.02	-	0.9	1.12	5.14	0.51	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW106	Historical	13 Sep 2017	0990_MW106A_170913	563665	0.04	0.73	0.44	1.17	1.52	-	0.07	0.05	0.04	<0.01	-	<0.05	0.02	0.11	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW106	Historical	13 Sep 2017	0990_MW106B_170913	563665	0.04	0.84	0.42	1.26	1.63	-	0.07	0.06	0.05	<0.01	-	<0.05	0.02	0.11	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW106	Historical	13 Sep 2017	0990_MW106C_170913	563665	0.03	0.83	0.45	1.28	1.62	-	0.07	0.05	0.04	<0.01	-	<0.05	0.02	0.11	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW106	Historical	13 Sep 2017	0990_MW106D_170913	563665	0.03	0.79	0.43	1.22	1.58	-	0.07	0.06	0.05	<0.01	-	<0.05	0.02	0.11	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW106	Historical	24 Sep 2017	0990_MW106_170924	565191	0.05	1.3	0.42	1.72	2.22	-	0.07	0.1	0.09	<0.01	-	<0.05	0.02	0.15	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW106	Historical	26 Nov 2017	0990_MW106_171124	576521	0.04	0.86	0.39	1.25	1.62	-	0.07	0.05	0.03	<0.01	-	<0.05	0.03	0.13	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW106	Historical	19 Mar 2018	0990_M106_180319	590387	0.03	0.94	0.35	1.29	1.66	-	0.07	0.09	0.05	<0.01	-	<0.05	0.02	0.10	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW106	Historical	18 Nov 2020	0990_MW106_201118	ES2041128	0.03	0.77	0.32	1.09	1.35	-	0.06	0.04	0.03	<0.02	-	<0.1	<0.02	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW106	Historical	21 Oct 2022	0990_MW106_221021	ES2238125	0.05	0.97	0.45	1.42	1.89	-	0.08	0.07	0.05	<0.02	-	<0.1	0.04	0.16	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW106	Historical	31 Mar 2023	0990_MW106_230331	ES2311391	0.05	0.92	0.62	1.54	2.05	-	0.12	0.11	0.06	<0.02	-	<0.1	0.03	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW106	Historical	27 Sep 2023	0990_MW106_2309	ES2333199	0.05	0.82	0.42	1.24	1.69	-	0.07	0.06	0.05	<0.02	-	<0.1	0.03	0.17	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW106	Historical	14 May 2024	0990_MW106_240514	ES2416309	0.04	0.70	0.27	0.97	1.43	-	0.10	0.07	0.04	<0.02	-	<0.1	0.03	0.13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW106	Dry Season	18 Oct 2024	0990_MW106_241018	ES2435779	0.04	0.65	0.38	1.03	1.45	-	0.07	0.07	0.04	<0.02	-	<0.1	0.03	0.12	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW106	End of Wet	06 May 2025	0990_MW106_250506	ES2513390	0.04	0.62	0.41	1.03	1.50	-	0.10	0.08	0.04	<0.02	-	<0.1	0.03	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW107	Historical	24 Sep 2017	0990_MW107_170924	565191	0.04	1.2	0.36	1.56	1.93	-	0.05	0.08	0.05	<0.01	-	<0.05	0.03	0.1	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW107	Historical	26 Nov 2017	0990_MW107_171124	576521	0.04	1.2	0.36	1.56	1.91	-	0.05	0.04	0.03	<0.01	-	0.05	0.04	0.08	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW107	Historical	19 Mar 2018	0990_M107_180319	590387	0.04	1.6	0.41	2.01	2.38	-	0.06	0.08	0.05	<0.01	-	<0.05	0.03	0.09	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW107	Historical	18 Jan 2019	0990_MW107_190118	637116	0.02	0.36	0.15	0.51	0.62	-	0.02	0.02	0.01	<0.01	-	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW107	Historical	23 Apr 2020	0990_MW107_200423	ES2014306	0.03	0.81	0.34	1.15	1.35	-	0.04	0.04	0.02	<0.02	-	<0.1	0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW107	Historical	18 Nov 2020	0990_MW107_201118	ES2041128	0.02	0.73	0.22	0.95	1.05	-	0.03	0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW107	Historical	20 Apr 2021	0990_MW107_210420	ES2115517	0.05	0.95	0.39	1.34	1.69	-	0.04	0.04	0.04	<0.02	-	<0.1	0.03	0.13	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW107	Historical	09 Oct 2021	0990_MW107_211009	ES2136989	0.02	0.49	0.23	0.72	0.85	-	0.04	0.03	<0.02	<0.02	-	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW107	Historical	24 Oct 2022	0990_MW107_2210	ES2238126	0.02	0.57	0.26	0.83	0.96	-	0.04	0.03	<0.02	<0.02	-	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW107	Historical	31 Mar 2023	0990_MW107_230331	ES2311391	0.02	0.68	0.26	0.94	1.07	-	0.03	0.03	0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW107	Historical	27 Sep 2023	0990_MW107_2309	ES2333198	0.02	0.58	0.23	0.81	0.91	-	0.03	0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW107	Historical	14 May 2024	0990_MW107_240514	ES2416309	0.02	0.64	0.15	0.79	0.92	-	0.03	0.02	0.02	<0.02	-	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW107	Dry Season	18 Oct 2024	0990_MW107_241018	ES2435779	0.01	0.41	0.19	0.60	0.66	-	0.02	0.03	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW107	End of Wet	06 May 2025	0990_MW107_250506	ES2513390	0.01	0.44	0.17	0.61	0.66	-	0.02	0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW109D	Historical	24 Sep 2017	0990_MW109D_170924	565191	0.06	1.9	0.54	2.44	2.93	-	0.07	0.11	0.07	<0.01	-	<0.05	0.02	0.14	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW109D	Historical	26 Nov 2017	0990_MW109D_171126	574650	0.04	1.2	0.60	1.8	2.15	-	0.07	0.06	0.03	<0.01	-	<0.05	0.03	0.10	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW109D	Historical	19 Mar 2018	0990_M109D_180319	590387	0.05	1.8	0.61	2.41	2.9	-	0.09	0.11	0.06	<0.01	-	<0.05	0.03	0.13	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW109D	Historical	18 Jan 2019	0990_MW109D_190118	637116	0.02	0.24	0.17	0.41	0.53	-	0.03	0.02	<0.01	<0.01	-	<0.05	<0.01	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW109D	Historical	24 Oct 2022	0990_MW109D_221024	ES2238125	0.03	0.97	0.43	1.40	1.67	-	0.07	0.05	0.03	<0.02	-	<0.1	<0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW109D	Historical	31 Mar 2023	0990_MW109D_230331	ES2311391	0.06	1.66	0.72	2.38	2.85	-	0.08	0.08	0.07	<0.02	-	<0.1	0.04	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW109D	Historical	27 Sep 2023	0990_MW109D_2309	ES2333199	0.05	1.36	0.62

Table T2
Current and Historical Groundwater Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T2 - Current and Historical Groundwater Analytical Results

				PFAS					PFAS - Perfluoroalkyl Sulfonic Acids																	PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
				Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexadecanoic acid (PFHxDA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR				0.001	0.0001	0.001	0.001	0.002	0.01	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.005	0.002	0.005	0.005	0.002	0.005
Human Health Receptors																																					
		PFAS in Drinking Water (ADWG 2025)		0.2	0.008	0.03				1																											
		PFAS NEMP 2025 Recreational water quality guideline		10	2	2	2																														
Ecological Receptors																																					
		PFAS NEMP 2025 Freshwater 99%		19	0.00023																																
MW117	Historical	20 Apr 2021	0990_MW117_210420	ES2115517	0.05	1.12	0.98	2.10	2.76	-	0.18	0.08	0.06	<0.02	-	<0.1	0.04	0.23	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW118D	Historical	21 Oct 2022	0990_MW118D_221021	ES2238125	0.06	1.53	1.02	2.55	3.27	-	0.14	0.16	0.07	<0.02	-	<0.1	0.04	0.22	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW118D	Historical	31 Mar 2023	0990_MW118D_230330	ES2311391	0.07	1.82	1.03	2.85	3.53	-	0.13	0.13	0.09	<0.02	-	<0.1	0.05	0.19	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW118D	Historical	27 Sep 2023	0990_MW118D_230927	ES2333199	0.06	0.51	0.82	1.33	1.91	-	0.12	0.11	0.04	<0.02	-	<0.1	0.04	0.19	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW118D	Historical	14 May 2024	0990_MW118D_240514	ES2416309	0.06	1.66	0.56	2.22	2.85	-	0.10	0.09	0.07	<0.02	-	<0.1	0.06	0.13	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW118D	Dry Season	18 Oct 2024	0990_MW118D_241018	ES2435779	0.05	1.47	0.72	2.19	2.81	-	0.09	0.11	0.06	<0.02	-	<0.1	0.05	0.14	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.06	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW118D	End of Wet	08 May 2025	0990_MW118D_250508	ES2513390	0.05	1.33	0.67	2.00	2.74	-	0.08	0.08	0.05	<0.02	-	0.1	0.10	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.11	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW118I	Historical	21 Oct 2022	0990_MW118I_221021	ES2238125	0.07	2.00	1.10	3.10	3.83	-	0.14	0.14	0.08	<0.02	-	<0.1	0.05	0.22	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW118I	Historical	31 Mar 2023	0990_MW118I_230330	ES2311391	0.10	2.90	1.28	4.18	5.07	-	0.16	0.15	0.13	<0.02	-	<0.1	0.07	0.25	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW118I	Historical	27 Sep 2023	0990_MW118I_230927	ES2333199	0.09	2.57	1.29	3.86	4.76	-	0.17	0.16	0.10	<0.02	-	<0.1	0.06	0.28	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW118I	Historical	14 May 2024	0990_MW118I_240514	ES2416309	0.06	1.86	0.63	2.49	3.13	-	0.12	0.11	0.08	<0.02	-	<0.1	0.04	0.16	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW118I	Dry Season	18 Oct 2024	0990_MW118I_241018	ES2435779	0.06	1.62	0.82	2.44	3.09	-	0.11	0.13	0.07	<0.02	-	<0.1	0.04	0.16	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW118I	End of Wet	06 May 2025	0990_MW118I_250506	ES2513390	0.05	1.37	0.66	2.03	2.63	-	0.09	0.10	0.06	<0.02	-	<0.1	0.08	0.16	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW118S	Historical	23 Sep 2017	0990_MW118_170923	565020	0.03	1.5	0.54	2.04	2.56	-	0.14	0.11	0.04	<0.01	-	<0.05	0.04	0.15	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW118S	Historical	02 Nov 2017	0990_MW118_171102	571200	0.04	1.5	0.66	2.16	2.65	-	0.10	0.15	0.05	<0.01	-	<0.05	0.02	0.11	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW118S	Historical	26 Nov 2017	0990_MW118_171126	574650	0.03	1.4	0.65	2.05	2.47	-	0.10	0.11	0.04	<0.01	-	<0.05	0.02	0.11	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW118S	Historical	23 Apr 2020	0990_MW118_200423	ES2014306	0.07	0.74	0.90	1.64	2.30	-	0.13	0.12	0.05	<0.02	-	<0.1	0.04	0.21	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW118S	Historical	09 Oct 2021	0990_MW118_211009	ES2136989	0.05	1.14	0.92	2.06	2.68	-	0.14	0.14	0.06	<0.02	-	<0.1	0.03	0.18	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW118S	Historical	30 Mar 2023	0990_MW118_230330	ES2311391	0.08	1.72	1.29	3.01	3.81	-	0.14	0.16	0.10	<0.02	-	<0.1	0.05	0.24	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW118S	Historical	27 Sep 2023	0990_MW118_230927	ES2333198	0.08	1.87	1.18	3.05	3.86	-	0.16	0.16	0.09	<0.02	-	<0.1	0.05	0.24	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW118S	Historical	14 May 2024	0990_MW118_240514	ES2416309	0.06	1.87	0.71	2.58	3.21	-	0.11	0.11	0.09	<0.02	-	<0.1	0.03	0.16	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW119	Historical	09 Sep 2017	0990_MW119A_170909	562845	0.04	1.2	0.44	1.64	1.98	-	0.07	0.07	0.03	<0.01	-	<0.05	0.03	0.08	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW119	Historical	09 Sep 2017	0990_MW119B_170909	562845	0.04	1.1	0.41	1.51	1.83	-	0.06	0.06	0.03	<0.01	-	<0.05	0.03	0.08	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW119	Historical	09 Sep 2017	0990_MW119C_170909	562845	0.03	1.1	0.43	1.53	1.83	-	0.06	0.06	0.03	<0.01	-	<0.05	0.02	0.08	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW119	Historical	10 Sep 2017	0990_MW119D_170910	562845	0.03	1.1	0.38	1.48	1.78	-	0.06	0.07	0.03	<0.01	-	<0.05	0.02	0.07	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW119	Historical	22 Sep 2017	0990_MW119_170923	570292	0.03	1.2	0.42	1.62	1.92	-	0.06	0.06	0.04	<0.01	-	<0.05	0.02	0.07	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW119	Historical	02 Nov 2017	0990_MW119_171102	571265	0.03	1.1	0.37	1.47	1.77	-	0.07	0.07	0.03	<0.01	-	<0.05	0.02	0.07	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW119	Historical	26 Nov 2017	0990_MW119_171126	574650	0.03	1.1	0.35	1.45	1.73	-	0.06	0.06	0.03	<0.01	-	<0.05	0.02	0.07	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW119	Historical	27 Sep 2023	0990_MW119_2309	ES2333199	0.03	0.96	0.41	1.37	1.65	-	0.06	0.05	0.03	<0.02	-	<0.1	0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW119	Historical	07 Sep 2017	0990_MW119_170907	562775	0.11	5.6	1.0	6.6	7.47	-	0.12	0.11	0.09	<0.02	-	0.05	0.07	0.27	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW127	Historical	26 Nov 2017	0990_MW127_171126	574650	0.06	2.7	0.80	3.5	4.08	-	0.09	0.09	0.05	<0.01	-	0.07	0.05	0.14	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW127	Historical	27 Jan 2018	0990_MW127_180127	582882	0.06	1.7	2.1	3.8	4.77	-	0.22	0.21	0.09	<0.01	-	0.07	0.06	0.23	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW127	Historical	17 May 2018	0990_MW127_180517	599599	0.10	5.1	0.93	6.03	6.89	-	0.12	0.12	0.06	<0.01	-	0.06	0.08	0.27	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW127	Historical	03 Jul 2018	0990_MW127_180702	606032	0.09	3.0	0.71	3.71	4.4	-	0.09	0.09	0.06	<0.01	-	<0.05	0.07	0.25	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW127	Historical	28 Nov 2018	0990_MW127_181128	ES1836471	0.07	1.72	0.71	2.43	2.97	-	0.08	0.08	0.05	<0.02	-	<0.1	0.06	0.17	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW127	Historical	18 Dec 2018	0990_MW127_181218	634367	0.30	5.8	3.0	8.8	12.47	-	0.41	0.42	0.34	<0.01	-	0.32	0.31	1.4	0.16	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW127	Historical	14 Mar 2019	0990_MW127_190314	ES1908411	0.36	13.2	3.31	16.5	19.4	-	0.53	0.45	0.27	0.02	-	<0.1	0.22	0.84	0.18	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW127	Historical	18 Jun 2019	0990_MW127_190618	ES1918993	0.16	3.62	1.49	5.11	6.47	-	0.21	0.20	0.10	<0.02	-	<0.1	0.11	0.50	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW127	Historical	16 Sep 2019	0990_MW127_190916	ES1930582	0.11	2.50	1.12	3.62	4.61	-	0.20	0.18	0.07	<0.02	-	<0.1	0.09	0.29	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW127	Historical	03 Dec 2019	0990_MW127_191203	ES1940340	0.08	2.18	0.85	3.03	3.80	-	0.11	0.12	0.07	<0.02	-	<0.1	0.07	0.28	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW127	Historical	23 Apr 2020	0990_MW127_200423	ES2014306	0.05	1.10	0.43	1.53	1.94	-	0.06	0.06	0.04	<0.02	-	<0.1	0.04	0.14	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW127	Historical	18 Nov 2020	0990_MW127_9.5_201118	ES2041128	0.07	1.51	0.68	2.19	2.79	-	0.09	0.08	0.05	<0.02	-	<0.1	0.06	0.23	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW127	Historical	18 Nov 2020	0990_MW127_13_201118	ES2041128	0.05	1.20	0.52	1.72	2.19	-	0.08	0.06	0.04	<0.02	-	<0.1	0.04	0.18	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW127	Historical	18 Nov 2020	0990_MW127_17.5_201118	ES2041128	0.04	1.17	0.27	1.44	1.70	-	0.05	0.03	0.02	<0.02	-	<0.1	0.03	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW127	Historical	19 Apr 2021	0990_MW127_210419	ES2115517	0.25	6.10	2.31	8.41	10.6	-	0.24	0.26	0.18	<0.02	-	0.1	0.23	0.75	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW127	Historical	07 Jun 2021	0990_MW127_210607	ES2121612	0.18	7.86	1.79	9.65	11.2	-	0.22	0.23	0.14	<0.02	-	0.1	0.13	0.49	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW127	Historical	09 Oct 2021	0990_MW127_211009	ES2136989	0.08	1.79	0.72	2.51	3.16	-	0.09	0.09	0.05	<0.02	-	<0.1	0.06	0.24	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW127	Historical	20 Oct 2022	0990_MW127_221020	ES2238126	0.08	1.91	0.86	2.77	3.50	-	0.12	0.12	0.06	<0.02	-	<0.1	0.08	0.23	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW127	Historical	04 Apr 2023	0990_MW127_230404	ES2311391	0.56	26.8	3.40	30.2	33.9	-	0.37	0.38	0.43	0.04	-	0.2	0.32	1.09	0.27	0.03	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW127	Historical	26 Sep 2023	0990_MW127_230926	ES2333198	0.09	2.71	1.00	3.71	4.52	-	0.13	0.12	0.07	<0.02	-	<0.1	0.08	0.28	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW127	Historical	13 May 2024	0990_MW127_240513	ES2416309	0.06	1.65	0.53	2.18	2.86	-	0.11	0.10	0.05	<0.02	-	<0.1	0.08	0.21	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW127	Dry Season	19 Oct 2024	0990_MW127_241018	ES2435779	0.08	2.34	1.11	3.45	4.38	-	0.14	0.18	0.07	<0.02	-	<0.1	0.08	0.28	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW127	End of Wet	07 May 2025	0990_MW127_250507	ES2513390	0.11	3.52	1.40	4.92	6.15	-	0.17	0.19	0.11	<0.02	-	<0.1	0.12	0.42	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW129	Historical	26 Nov 2017	0990_MW129_171126	574650	18	220	100	320	507.42	-	26	20	12	<0.01	-	11	17	69	14	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.42	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW129	Historical	26 Jan 2018	0990_MW129_180126	582882	9.7	110	60	170	260.24	-	11	9.8	6.7	<0.2	-	5.7	8.5	32	6.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.27	0.37	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW129	Historical	16 Mar 2018	0990_MW129_180316	590120	17	200	120	320	489.58	-	20	20	14	<0.2	-	9.1	20	58	11	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.48	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW129	Historical	04 Jul 2018	0990_MW129_180703	606032	13	210	79	289	414.97	-	16	15	9.0	<0.01	-	7.2	12	45	8.3	0.10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.37	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW129	Historical	04 Jul 2018	0990_MW129_180703	607895	2.4	32	11	43	96.72	-	2.6	2.2	2.1	<0.01	-	11	9.5	22	1.9	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.16	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW129	Historical	28 Nov 2018	0990_MW129_181128	ES1836471	11.8	220	110	330	461	-	18.2	15.6	11.0	<0.02	-	5.6	9.10	42.2	7.65	0.12	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.32	0.05	<0.05	0.07	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW129	Historical	18 Dec 2018	0990_MW129_181218	634367	30	230	150	380	710.51	-	38	34	45	<0.01	-	18	31	110	23	0.28	0.03	<0.01	<0.01	<0.01	<0.01	0.02	0.99	0.12	<0.01	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW129	Historical	14 Mar 2019	0990_MW129_190314	ES1908411	82.4	343	180	523	1,250	-	89.9	75.8	40.4	0.10	-	9.2	84.9	263	81.2	0.31	0.08	0.10	0.02	<0.02	<0.05	0.07	1.94	0.30	<0.05	0.10	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW129	Historical	18 Jun 2019	0990_MW129_190618	ES1918993	24.2	176	106	282	539	-	32.1	28.9	15.5	0.03	-	15.0	25.4	92.8	21.9	0.13	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.94	<0.05	<0.05	0.08	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW129	Historical	16 Sep 2019	0990_MW129_190916	ES1930582	8.72	91.2	51.4	143	237	-	12.6	10.9	9.21	<0.02	-	7.2	9.15	29.9	6.05	0.05	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.29	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW129	Historical	03 Dec 2019	0990_MW129_191203	ES1940340	2.56	61.1	32.8	93.9	129	-	5.83	5.68	4.62	<0.02	-	0.8	2.60	11.5	1.76	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.10	<0.05	<0.05	0.04	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW129	Historical	23 Apr 2020

Table T2
Current and Historical Groundwater Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T2 - Current and Historical Groundwater Analytical Results

				PFAS					PFAS - Perfluoroalkyl Sulfonic Acids																															
				Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropropanesulfonic acid (PFPS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexadecanoic acid (PFHxDA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR				0.001	0.0001	0.001	0.001	0.002	0.01	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.005	0.002	0.005	0.005	0.002	0.005
Human Health Receptors																																								
		PFAS in Drinking Water (ADWG 2025)		0.2	0.008	0.03				1																														
		PFAS NEMP 2025 Recreational water quality guideline		10	2	2	2																																	
Ecological Receptors																																								
		PFAS NEMP 2025 Freshwater 99%		19	0.00023																																			
MW134	Historical	28 Mar 2018	0990_MW134_180328	592008	0.02	0.79	0.41	1.2	1.44	-	0.05	0.09	0.02	<0.01	-	<0.05	0.01	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW134	Historical	10 Apr 2018	0990_MW134A_180410	593475	0.02	0.58	0.28	0.86	1.05	-	0.04	0.04	0.02	<0.01	-	<0.05	0.02	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW134	Historical	10 Apr 2018	0990_MW134B_180410	593475	0.03	1.1	0.67	1.77	2.12	-	0.07	0.09	0.04	<0.01	-	<0.05	0.02	0.09	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW134	Historical	10 Apr 2018	0990_MW134C_180410	593475	0.03	1.1	0.66	1.76	2.12	-	0.07	0.09	0.04	<0.01	-	<0.05	0.02	0.10	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW134	Historical	17 Jan 2019	0990_MW134_190117	637116	0.04	1.2	0.74	1.94	2.42	-	0.10	0.14	0.04	<0.01	-	<0.05	0.03	0.11	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW134	Historical	22 Apr 2021	0990_MW134_210422	ES2115517	0.06	1.45	1.55	3.00	3.85	-	0.19	0.23	0.08	<0.02	-	<0.1	0.04	0.22	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05
MW134	End of Wet	08 May 2025	0990_MW134_250508	ES2513390	0.04	1.34	0.72	2.06	2.56	-	0.10	0.12	0.06	<0.02	-	<0.1	0.02	0.12	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW135	Historical	22 Sep 2017	0990_MW135_170922	570292	<0.01	0.02	0.01	0.03	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW135	Historical	02 Nov 2017	0990_MW135_171102	571265	<0.01	<0.01	0.01	0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW135	Historical	24 Nov 2017	0990_MW135_171124	574650	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW135	Historical	02 Feb 2018	0990_MW135_180202	583429	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW135	Historical	26 Mar 2018	0990_MW135_180326	591521	<0.01	0.03	0.02	0.05	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW135	Historical	17 Jan 2019	0990_MW135_190117	637116	<0.01	0.02	<0.01	0.02	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW135	Historical	21 Apr 2021	0990_MW135_210421	ES2115517	0.01	0.10	0.12	0.22	0.29	-	0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW135	Historical	09 Oct 2021	0990_MW135_211009	ES2136989	<0.01	0.02	0.04	0.06	0.06	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW135	Historical	25 Sep 2023	0990_MW135_230925	ES2333200	<0.01	0.06	0.05	0.11	0.13	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW135	Dry Season	21 Oct 2024	0990_MW135_241021	ES2435779	0.01	0.12	0.08	0.20	0.27	-	0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW135	End of Wet	08 May 2025	0990_MW135_250508	ES2513390	<0.01	0.04	0.01	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW136	Historical	22 Sep 2017	0990_MW136_170922	570292	<0.01	0.01	<0.01	0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW136	Historical	02 Nov 2017	0990_MW136_171102	571200	<0.01	0.01	<0.01	0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW136	Historical	24 Nov 2017	0990_MW136_171124	574650	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW136	Historical	20 Jan 2018	0990_MW136_180120	581555	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW136	Historical	26 Mar 2018	0990_MW136_180326	593293	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW136	Dry Season	20 Oct 2024	0990_MW136_241020	ES2435779	<0.01	0.05	<0.01	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW136	End of Wet	06 May 2025	0990_MW136_250506	ES2513390	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
MW137	Historical	15 Sep 2017	0990_MW137A_170915	563889	<0.01	0.19	0.13	0.32	0.38	-	0.02	0.02	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW137	Historical	15 Sep 2017	0990_MW137B_170915	563889	<0.01	0.19	0.13	0.32	0.39	-	0.02	0.03	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW137	Historical	15 Sep 2017	0990_MW137C_170915	563889	<0.01	0.22	0.13	0.35	0.42	-	0.02	0.03	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW137	Historical	22 Sep 2017	0990_MW137_170922	565020	0.01	0.17	0.10	0.27	0.4	-	0.03	0.02	<0.01	<0.01	-	<0.05	0.02	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW137	Historical	02 Nov 2017	0990_MW137_171102	571200	<0.01	0.23	0.12	0.35	0.42	-	0.02	0.03	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW137	Historical	24 Nov 2017	0990_MW137_171124	574650	<0.01	0.20	0.11	0.31	0.37	-	0.02	0.03	<0.01	<0.01	-	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW137	Historical	19 Jan 2018	0990_MW137_180119	581555	<0.01	0.16	0.13	0.29	0.35	-	0.02	0.02	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW137	Historical	26 Mar 2018	0990_MW137_180326	591521	<0.01	0.20	0.12	0.32	0.39	-	0.02	0.03	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW137	Historical	18 Jan 2019	0990_MW137_190118	637116	<0.01	0.10	0.09	0.19	0.23	-	0.02	0.01	<0.01	<0.01	-	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW137	Historical	20 Apr 2020	0990_MW137_200420	ES2014306	<0.01	0.26	0.22	0.48	0.56	-	0.03	0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW137	Historical	20 Apr 2021	0990_MW137_210420	ES2115517	0.01	0.22	0.19	0.41	0.51	-	0.03	0.03	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW137	Historical	10 Oct 2021	0990_MW137_211010	ES2136989	<0.01	0.16	0.14	0.30	0.35	-	0.03	0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW137	Historical	20 Oct 2022	0990_MW137_221020	ES2238126	0.01	0.29	0.23	0.52	0.66	-	0.05	0.04	<0.02	<0.02	-	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW137	Historical	25 Sep 2023	0990_MW137_2309	ES2333200	<0.01	0.19	0.15	0.34	0.40	-	0.03	0.03	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW137	Dry Season	20 Oct 2024	0990_MW137_241020	ES2435779	<0.01	0.19	0.16	0.35	0.41	-	0.03	0.03	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW137	End of Wet	06 May 2025	0990_MW137_250506	ES2513390	<0.01	0.25	0.19	0.44	0.50	-	0.03	0.03	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW138	Historical	22 Sep 2017	0990_MW138_170922	570292	0.02	1.4	0.39	1.79	1.98	-	0.04	0.05	0.02	<0.01	-	<0.05	0.01	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW138	Historical	02 Nov 2017	0990_MW138_171102	571200	0.02	1.5	0.37	1.87	2.06	-	0.05	0.06	0.02	<0.01	-	<0.05	<0.01	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW138	Historical	24 Nov 2017	0990_MW138_171124	574650	0.02	1.4	0.36	1.76	1.95	-	0.05	0.06	0.02	<0.01	-	<0.05	<0.01	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW138	Historical	19 Jan 2018	0990_MW138_180119	581555	0.02	1.4	0.39	1.79	2	-	0.04	0.05	0.02	<0.01	-	<0.05	0.02	0.05	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW138	Historical	26 Mar 2018	0990_MW138_180326	591521	0.02	0.95	0.49	1.44	1.73	-	0.08	0.10	0.02	<0.01	-	<0.05	0.01	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW138	Historical	18 Jan 2019	0990_MW138_190118	637116	0.02	1.0	0.43	1.43	1.66	-	0.06	0.07	0.02	<0.01	-	<0.05	0.01	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW138	Historical	20 Apr 2021	0990_MW138_210420	ES2115517	0.03	2.09	1.20	3.29	3.68	-	0.13	0.09	0.06	<0.02	-	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW138	End of Wet	06 May 2025	0990_MW138_250506	ES2513390	0.01	1.10	0.35	1.45	1.60	-	0.05	0.04	0.03	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW140	Historical	29 Sep 2017	0990_MW140_170929	566028	<0.01	0.04	0.03	0.07	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW140	Historical	24 Nov 2017	0990_MW140_171124	574650	<0.01	0.01	0.01	0.02	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW140	Historical	19 Jan 2018	0990_MW140_180119	581555	<0.01	0.07	0.08	0.15	0.18	-	0.01	0.01	<0.01	<0.01	-	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW140	Historical	26 Mar 2018	0990_MW140_180326	591521	<0.01	0.02	<0.01	0.02	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW140	Historical	19 Dec 2018	0990_MW140_181219	634367	<0.01	0.02	0.02	0.04	<0.1	-	0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW140	Historical	20 Apr 2020	0990_MW140_200420	ES2014306	0.02	0.51	0.40	0.91	1.10	-	0.05	0.05	0.02	<0.02	-	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW140	Historical	20 Apr 2021	0990_MW140_210420	ES2115517	<0.01	0.10	0.10	0.20	0.20	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW140	Historical	10 Oct 2021	0990_MW140_211010	ES2136989	<0.01	0.05	0.07	0.12	0.12	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW140	Historical	20 Oct 2022	0990_MW140_2210	ES2238126	0.02	0.53	0.44	0.97	1.21	-	0.06	0.08	0.02	<0.02	-	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW140	Historical	25 Sep 2023	0990_MW140_230922	ES2333200	<0.01	0.15	0.08	0.23	0.23	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW140	Dry Season	01 Nov 2024	0990_MW140_241101	ES2435779	<0.01	0.17	0.13	0.30	0.30	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW140	End of Wet	07 May 2025	0990_MW140_250507	ES2513390	<0.01	0.14	0.08	0.22	0.22	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW142	Historical	14 Sep 2017	0990_MW142A_170914	563665	<0.01	0.03	0.04	0.07	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW142	Historical	14 Sep 2017	0990_MW142B_170914	563665	<0.01	0.03	0.04	0.07	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW142	Historical	14 Sep 2017	0990_MW142C_170914	563665	<0.01	0.04	0.04	0.08	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Table T2
Current and Historical Groundwater Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T2 - Current and Historical Groundwater Analytical Results

				PFAS					PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
				Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexadecanoic acid (PFHxDA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR				0.001	0.0001	0.001	0.001	0.002	0.01	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.001	0.001	0.002	0.005	0.002	0.005	0.005	0.002	0.005
Human Health Receptors																																		
		PFAS in Drinking Water (ADWG 2025)		0.2	0.008	0.03				1																								
		PFAS NEMP 2025 Recreational water quality guideline		10	2	2	2																											
Ecological Receptors																																		
		PFAS NEMP 2025 Freshwater 99%		19	0.00023																													
MW149	Historical	25 Mar 2021	0990_MW149_8.0_210325	785172	56	1,600	750	2,350	2,837.81	33	73	63	85	<0.1	-	22	26	110	16	0.52	<0.1	<0.1	<0.1	<0.1	0.05	<0.1	0.11	<0.1	<0.1	0.23	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
MW149	Historical	25 Mar 2021	0990_MW149_12.0_210325	785172	35	1,300	600	1,900	2,191.62	18	41	43	43	<0.1	-	14	16	71	10	0.46	<0.1	<0.1	<0.1	<0.1	0.02	<0.1	<0.05	<0.1	<0.1	0.14	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
MW149	Historical	25 Mar 2021	0990_MW149_16_210325	785172	25	580	290	870	1,086.5	14	31	28	31	<0.1	-	11	14	53	8.4	0.42	<0.1	<0.1	<0.1	<0.1	0.11	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
MW149	Historical	20 Oct 2022	0990_MW149_221020	ES2238125	9.70	257	180	437	569	-	22.3	28.3	17.0	0.09	-	7.2	9.20	34.4	3.70	0.15	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.28	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW149	Historical	04 Apr 2023	0990_MW149_230404	ES2311391	68.0	2,030	1,030	3,060	3,890	-	135	169	117	0.23	-	44.4	55.4	209	29.0	0.79	0.07	<0.02	<0.02	<0.02	<0.05	<0.05	0.17	<0.05	<0.05	0.94	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW149	Historical	26 Sep 2023	0990_MW149_230926	ES2333199	12.6	261	221	482	649	-	28.1	31.6	20.2	0.06	-	8.6	10.0	49.1	5.88	0.19	0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.43	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW149	Historical	13 Dec 2023	0990_MW149_231213	ES2343667	9.99	201	142	343	473	-	22.0	24.9	17.2	0.06	-	6.7	9.00	34.5	4.80	0.17	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.29	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW149	Historical	16 Jan 2024	0990_MW149_240116	ES2401444	14.4	372	248	620	827	-	35.7	35.6	34.6	0.04	-	11.2	14.0	52.9	7.70	0.33	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.24	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW149	Historical	13 Feb 2024	0990_MW149_240213	ES2404742	36.7	1,050	525	1,580	2,020	-	71.4	71.0	87.2	<0.05	-	21.8	31.3	112	15.2	0.56	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	0.09	<0.05	<0.05	0.36	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12
MW149	Historical	12 Mar 2024	0990_MW149_240312	ES2408288	35.0	962	484	1,450	1,860	-	70.6	74.2	55.7	<0.50	-	22.6	26.8	118	15.0	0.62	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	<0.50	<0.50	<0.50	0.56	<1.25	<0.50	<1.25	<1.25	<0.50	<1.25
MW149	Historical	11 Apr 2024	0990_MW149_240411	ES2412007	15.1	362	161	523	704	-	27.0	26.2	18.6	<0.05	-	9.0	13.3	48.5	6.80	0.54	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05	0.32	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12
MW149	Historical	08 May 2024	0990_MW149_240508	ES2416309	13.2	368	156	524	702	-	23.6	33.8	21.7	0.17	-	8.4	9.88	41.7	5.80	0.36	0.05	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.27	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW149	Dry Season	19 Oct 2024	0990_MW149_241019	ES2435779	6.22	181	70.8	252	336	-	13.6	15.7	8.08	0.11	-	3.9	4.79	20.4	3.01	0.13	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	<0.05	<0.05	0.32	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12
MW149	End of Wet	07 May 2025	0990_MW149_250507	ES2513390	12.6	336	200	536	722	-	27.5	33.7	23.6	<0.04	-	8.3	10.7	47.2	5.04	0.25	<0.04	<0.04	<0.04	<0.04	<0.11	<0.05	<0.05	<0.05	<0.05	0.41	<0.11	<0.04	<0.11	<0.11	<0.04	<0.11
MW231	Historical	29 Apr 2017	0990_NT0064MW12_170429	544592	87	270	240	-	-	-	61	57	24	<0.3	-	30	65	280	47	1.1	<0.3	<0.3	<0.3	<0.3	<0.3	<1.5	7.8	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
MW231	Historical	20 Jul 2017	0990_064MW12_170723	555721	230	400	730			-	220	170	93	<0.01	-	87	160	730	140	2.6	<0.01	<0.01	0.15	<0.01	<0.01	<0.01	30	0.69	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW231	Historical	01 Sep 2017	0990_NT0064MW12A_20170901	561847	200	290	810	1,100	2,690.61	-	180	150	110	<0.2	-	80	150	560	130	2.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	28	0.21	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW231	Historical	01 Sep 2017	0990_NT0064MW12B_20170901	561847	200	270	740	1,010	2,421	-	160	130	90	<0.2	-	75	120	500	110	2.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	24	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW231	Historical	01 Sep 2017	0990_NT0064MW12C_20170901	561847	310	370	960	1,330	3,663.73	-	260	280	230	<0.2	-	120	200	720	170	3.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	40	0.23	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW231	Historical	24 Sep 2017	0990_064MW12_170924	565191	150	110	260	370	1,473.64	-	140	63	190	<0.01	-	71	90	250	140	4	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	5.6	0.04	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW231	Historical	02 Feb 2018	0990_NT0064MW12_180202	583407	130	650	480	1,130	2,225.48	-	140	140	110	<0.2	-	51	97	340	75	2.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	9.7	0.78	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW231	Historical	28 Mar 2018	0990_064MW12_180328	592008	190	790	940	1,730	3,559.11	-	250	170	120	<0.2	-	87	160	690	140	4.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	17	0.91	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW231	Historical	30 Jun 2018	0990_064MW12_180629	605823	230	670	860	1,530	3,366.6	-	190	160	190	<0.2	-	85	160	660	130	7.6	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	24	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW231	Historical	27 Nov 2018	0990_064MW12	E1835803	173	548	645	1,190	2,400	-	103	117	99	<0.02	-	50.5	96.3	453	84.6	8.24	0.06	<0.02	<0.02	<0.02	<0.05	<0.05	23	1.25	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW231	Historical	19 Dec 2018	0990_064MW12_181219	634367	100	480	410	890	1,801.6	-	80	55	49	<2	-	42	70	440	57	3.6	<2	<2	<2	<2	<2	<2	15	<2	<2	<2	<2	<2	<2	<2	<2	<2
MW231	Historical	15 Mar 2019	0990_064MW12_190315	ES1908082	170	991	516	1,510	2,850	-	154	136	117	<0.02	-	59.2	109	456	118	3.96	0.11	<0.02	<0.02	<0.02	<0.05	<0.05	14.7	1.73	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW231	Historical	20 Jun 2019	0990_064MW12_190620	ES1919488	84.7	439	356	795	1,550	-	87.7	88.4	54.4	<0.02	-	36.4	60.5	279	52.9	2.44	0.04	<0.02	<0.02	<0.02	<0.05	<0.05	8.20	1.08	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW231	Historical	18 Sep 2019	0990_064MW12_190918	ES1930582	95.5	456	338	794	1,600	-	86.0	96.1	74.1	<0.02	-	42.4	75.3	262	60.5	2.74	0.05	<0.02	<0.02	<0.02	<0.05	<0.05	9.15	1.32	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW231	Historical	05 Dec 2019	0990_064MW12_191205	ES1940585	124	690	582	1,270	2,470	-	152	138	89.2	<0.02	-	44.3	102	458	81.1	2.79	0.06	<0.02	<0.02	<0.02	<0.05	<0.05	10.2	1.21	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW231	Historical	23 Apr 2020	0990_MW231_200423	ES2014306	11.4	79.8	59.6	139	233	-	11.4	11.4	6.14	<0.02	-	3.9	7.40	33.8	6.69	0.31	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	1.36	0.11	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW231	Historical	21 Apr 2021	0990_MW231_210421	ES2115517	547	2,100	2,760	4,860	10,900	-	731	623	531	<0.40	-	431	482	2,240	390	19.0	<0.40	<0.40	<0.40	<0.40	<1.00	<0.40	60.9	4.24	<0.40	<0.40	<1.00	<0.40	<1.00	<1.00	<0.40	<1.00
MW231	Historical	08 Jun 2021	0990_MW231_210608	ES2121611	672	3,160	3,000	6,160	12,600	-	756	605	433	0.30	-	352	605	2,560	330	30.2	0.34	<0.04	<0.04	<0.04	<0.11	0.17	89.0	12.4	<0.05	<0.04	<0.11	<0.04	<0.11	<0.11	<0.04	<0.11
MW231	Historical	09 Oct 2021	0990_MW231_211009	ES2136989	215	802	722	1,520	3,230	-	165	142	82.5	<0.05	-	101	178	646	129	9.70	0.21	<0.05	<0.05	<0.05	<0.12	0.05	30.8	9.69	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12
MW231	Historical	21 Oct 2022	0990_MW231_11.0_221021	ES2238126	642	1,290	2,450	3,740	8,910	-	566	498	246	0.06	-	270	462	2,080	334	14.2	0.18	<0.02	<0.02	<0.02	<0.05	0.14	53.0	7.50	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW231	Historical	21 Oct 2022	0990_MW231_12.0_221021	ES2238126	600	1,230	2,410	3,640	8,860	-	552	505	270	0.06	-	280	520	2,050	362	15.4	0.19	<0.02	<0.02	<0.02	<0.05	0.12	53.0	8.00	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW231	Historical	21 Oct 2022	0990_MW231_15.0_221021	ES2238126	520	1,130	2,250	3,380	13,100	-	5,510	476	238	0.06	-	265	465	1,820	342	15.8	0.18	<0.02	<0.02	<0.02	<0.05	0.12	54.0	7.50	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW231	Historical	31 Mar 2023	0990_MW231_8.0_230331	ES2311391	1,140	4,180	3,610	7,790	16,000	-	923	906	692	<0.50	-	306	690	2,840	572	31.5	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	75.9	12.6	<0.50	<0.50	<1.25	<0.50	<1.25	<1.25	<0.50	<1.25
MW231	Historical	31 Mar 2023	0990_MW231_13.0_230331	ES2311391	1,290	4,180	3,920	8,100	16,900	-	924	1,010	700	<0.50	-	335	750	3,070	630	35.2	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	87.2	13.6	<0.50	<0.50	<1.25	<0.50	<1.25	<1.25	<0.50	<1.25
MW231	Historical	31 Mar 2023	0990_MW231_19.0_230331	ES2311391	1,200	3,960	3,910	7,870	16,600	-	997	966	702	<0.50	-	363	718	3,020	622	35.7	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	94.5	11.7	<0.50	<0.50	<1.25	<0.50	<1.25	<1.25	<0.50	<1.25
MW231	Historical	17 May 2023	0990_MW231_9.2_230517	ES2316586	614	3,290	2,620	5,910	11,000	-	628	474	438	<0.50	-	228	422	1,910	344	20.0	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	62.0	8.95	<0.50	<0.50	<1.25	<0.50	<1.25	<1.25	<0.50	<1.25
MW231	Historical	17 May 2023	0990_MW231_14.2_230517	ES2316586	892	3,680	3,040	6,720	13,200	-	722	668	501	<0.50	-	296	569	2,280	470	26.6	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	79.8	10.1	<0.50	<0.50	<1.25	<0.50	<1.25	<1.25	<0.50	<1.25
MW231	Historical	17 May 2023	0990_MW231_21.5_230517	ES2316586	892	3,740	3,200	6,940	13,400	-	748	642	526	<0.50	-	274	527	2,310	456	24.0	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	73.0	12.0	<0.50	<0.50	<1.25	<0.50	<1.25	<1.25	<0.50	<1.25
MW231	Historical	26 Sep 2023	0990_MW231_9.0_230926	ES2333198	568	1,860	2,370	4,230	9,060	-	495	416	351	<0.50	-	227	444	1,910	329	14.8	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	64.8	8.68	<0.50	<0.50	<1.25	<0.50	<1.25	<1.25	<0.50	<1.25
MW231	Historical	26 Sep 2023	0990_MW231_14.0_230926	ES2333198	552	1,760	2,300	4,060	8,670	-	490	371	320	<0.50	-	216	434	1,840	306	14.5	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	60.4	8.30	<0.50	<0.50	<1.25	<0.50	<1.25	<1.25	<0.50	<1.25
MW231	Historical	26 Sep 2023	0990_MW231_22.0_230926	ES2333198	567	1,830	2,340	4,170	9,080	-	501	428	361	<0.50	-	225	441	1,970	321	15.0	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	64.7	11.3	<0.50	<0.50	<1.25	<0.50	<1.25	<1.25	<0.50	<1.25
MW231	Historical	13 May 2024	0990_MW231_9_240513	ES2416309	93.6	687	393	1,080	2,130	-	120	98.8	56.4	<0.50	-	49.1	99.5	412	59.8	4.14	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	9.40	2.26	<0.50	<0.50	<1.25	<0.50	<1.25	<1.25	<0.50	<1.25
MW231	Historical	13 May 2024	0990_MW231_13_240513	ES2416309	105	763	432	1,200	2,320	-	124	105	64.3	<0.50	-	52.3	105	429	83.5	4.84	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	10.0	2.40	<0.50	<0.50	<1.25	<0.50	<1.25	<1.25	<0.50	<1.25
MW231	Historical	13 May 2024	0990_MW231_21_240513	ES2416309	102	826	449	1,280	2,370	-	123	93.4	65.3	<0.50	-	50.2	99.8	419	82.8	5.12	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	10.9	2.90	<0.50	<0.50	<1.25	<0.50	<1.25	<1.25	<0.50	<1.25
MW231	Dry Season	20 Oct 2024	0990_MW231_241020	ES2435779	108	338	389	727	1,730	-	116	97.2	42.9	<0.50	-	47.5	81.9	372	81.5	3.13	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	10.4	1.22	<0.50	<0.50	<1.25	<0.50	<1.25	<1.25	<0.50	<1.25
MW231	PMAP	12 Nov 2024	0990_MW231_241112	ES2437022	135	593	558	1,150	2,530	-	156	128	66.6	<0.05	-	63.6	124	530	99.2	4.47	0.08	<0.05	<0.05	<0.05	<0.12	<0.05	19.1	1.77	<0.05	0.06	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12
MW231	PMAP	05 Dec 2024	0990_MW231_241205	ES2439941	176	561	689	1,250	2,670	55.0	167	151	69.1	<0.50	-	77.2	124	471	108	4.40	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	18.7	2.12	<0.50	<0.50	<1.25	<0.50	<1.25	<1.25	<0.50	<1.25
MW231	PMAP	16 Jan 2025	0990_MW231_250116	ES2501554	333	1,040	1,080	2,120	4,320	-	239	189	139	<0.50	-	81.2	176	762	168	7.62	<0.50	<0.50	<0.50	<0.50	<1.25	<0.50	28.9	3.48	<0.50	<0.50	<1.25	<0.50	<1.25	<1.25	<0.50	<1.25
MW231	PMAP	18 Feb 2025	0990_MW231_250218	ES2504675	45.6	408	144	552	846	-	32.9	21.4	33.3	<0.05	-	11.3	19.9	91.6	18.8	1.58	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	2.88	0.63	<0.05	<0.05	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12
MW231	PMAP	20 Mar 2025	0990_MW231_250320	ES2508404	84.5	548	263	811	1,420	-	66.9	50.5	48.2	<0.48	-	23.0	47.4	210	50.5	2.83	<0.48	<0.48	<0.48	<0.48	<1.21	<0.48	4.92	0.96	<0.48	<0.48	<1.21	<0.48	<1.21	<1.21	<0.48	<1.21
MW231	PMAP	14 Apr 2025	0990_MW231_250414	ES2510861	62.4	446	231	677	1,140	-	51.6	42.6	35.5	<0.02	-	17.2	36.0	158	33.6	2.40	0.03	<0.02	<0.02	<0.02	<0.05	<0.05	3.85	0.38	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW231	End of Wet	06 May 2025	0990_MW231_250506	ES2513390	72.9	470	256	726	1,270	-	56.5	50.2	43.0	<0.43	-	20.2	39.4	197	33.8	2.52	<0.43	<0.43	<0.43	<0.43	<1.07	<0.43	5.89	0.89	<0.43	<0.43	<1.07	<0.43	<1.07	<1.07	<0.43	<1.07
MW235	Historical	29 Apr 2017	0990_NT0064MW13_170429	544592	45	1,200	170	-	-	-	15	16	8.2	<0.3	-	12	26	64	12	2.0	<0.3	<0.3	<0.3	<0.3	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
MW235	Historical	20 Jul 2017	0990_064MW13_170723	555721	33	750	160	-	-	-	17	16	10	<0.01	-	11	21	56	11	1.5	<0.01	<0.01	0.18	<0.01	<0.01	<0.01	3.5	0.45	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW235	Historical	24 Sep 2017	0990_064MW13_170924	565191	32	720	170	890	1,064	-	21	19	10	<1	-	11	19	51	11	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
MW235	Historical	02 Feb 2018	0990_NT0064MW13_180202	583407	19	660	92	752	849.35	-	8.3	6.7	6.1	<0.2	-	7.9	14	27	6.2	1.7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.45	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW235	Historical	28 Mar 2018	0990_064MW13_180328	592008	31	750	150	900	1,052.61	-	12	13	11	<0.2	-	10.0	19	44	9.9	1.7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.77	0.24	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW235	Historical	30 Jun 2018	0990_064MW13_180629	605823	32	760	170	930	1,106.08	-	18	21	14	<0.2	-	9.9	16	53	10	1.6	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.58	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW235	Historical	27 Nov 2018	0990_064MW13	E1835803	45.4	584	225	809	1,090	-	33.6	41.6	32.2	0.03	-	6.9	23.4	86.4	11.7	1.97	0.12	<0.02	<0.02	<0.02	<0.05	<0.05	0.63	0.16	<0.05	0.05	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW235	Historical	15 Mar 2019	0990_064MW13_190315	ES1908082	37.0	622	126	748	935	-	17.8	19.3	19.0	0.26	-	3.4	19.6	52.9	14.5	2.11	0.12	<0.02	<0.02	<0.02	<0.05	<0.05	0.82	0.07	<0.05	0.10	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW235	Historical	20 Jun 2019	0990_064MW13_190620	ES1919488	32.0	655	233	888	1,100	-	24.3	29.8	21.5	<0.02	-	2.4	16.2	72.2	11.8	0.95	0.05	<0.02	<0.02	<0.02	<0.05	<0.05	0.52	0.11	<0.05	0.07	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW235	Historical	18 Sep 2019	0990_064MW13_190918	ES1930582	36.7	763	229	992	1,240	-	29.4	34.4	20.6	<0.02	-	13.2	21.3	77.5	12.7	1.20	0.06	<0.02	<0.02	<0.02	<0.05	<0.05	0.58	0.15	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW235	Historical	05 Dec 2019	0990_064MW13_191205	ES1940585	35.7	1,000	246	1,250	1,500	-	26.0	41.9	29.5	0.03	-	14.8	20.2	72.5	11.6	1.31	0.10	<0.02	<0.02	<0.02	<0.05	<0.05	0.89	0.05	<0.05	0.14	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW235	Historical	19 Nov 2020	0990_MW235_201119	ES2041128	17.3	259	141	400	557	-	22.6	26.7	13.2	0.12	-

Table T2
Current and Historical Groundwater Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T2 - Current and Historical Groundwater Analytical Results

					PFAS					PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids											PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexadecanoic acid (PFHxDA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.001	0.0001	0.001	0.001	0.002	0.01	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.001	0.001	0.002	0.005	0.002	0.005	0.005	0.002	0.005
Human Health Receptors																																				
		PFAS in Drinking Water (ADWG 2025)			0.2	0.008	0.03				1																									
		PFAS NEMP 2025 Recreational water quality guideline			10	2	2	2																												
Ecological Receptors																																				
		PFAS NEMP 2025 Freshwater 99%			19	0.00023																														
MW285	Historical	19 Oct 2022	0990_MW285_221019	ES2238126	<0.01	0.18	0.21	0.39	0.44	-	0.03	0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW285	Historical	03 Apr 2023	0990_MW285_230403	ES2311391	<0.01	0.48	0.18	0.66	0.68	-	0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW285	Historical	26 Sep 2023	0990_MW285_230926	ES2333198	<0.01	0.42	0.23	0.65	0.68	-	0.03	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW285	Historical	13 May 2024	0990_MW285_240513	ES2416309	<0.01	0.25	0.32	0.57	0.65	-	0.04	0.04	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW285	Dry Season	22 Oct 2024	0990_MW285_241022	ES2435779	<0.01	0.20	0.25	0.45	0.51	-	0.03	0.03	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW400	Historical	14 May 2018	0990_MW145A_180514	598660	0.05	1.4	0.71	2.11	3	-	0.11	0.16	0.04	<0.01	-	<0.05	0.04	0.13	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.34	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW400	Historical	14 May 2018	0990_MW145B_180514	598660	0.04	1.4	0.75	2.15	2.68	-	0.11	0.16	0.04	<0.01	-	<0.05	0.03	0.13	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW400	Historical	14 May 2018	0990_MW145C_180514	598660	0.04	1.4	0.70	2.1	3.42	-	0.10	0.13	0.04	<0.01	-	<0.05	0.03	0.12	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.84	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW400	Historical	19 Dec 2018	0990_MW145_181219	634367	0.04	1.5	0.84	2.34	5.45	-	0.11	0.03	0.04	<0.01	-	<0.05	0.02	0.25	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	2.6	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW400	Historical	24 Apr 2020	0990_MW400_200424	ES2014306	0.04	1.19	0.75	1.94	2.76	-	0.11	0.12	0.06	<0.02	-	<0.1	0.02	0.13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.34	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW400	Historical	20 Apr 2021	0990_MW400_210420	ES2115517	0.04	1.43	0.87	2.30	2.82	-	0.11	0.13	0.06	<0.02	-	<0.1	0.03	0.15	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW400	Historical	09 Oct 2021	0990_MW400_211009	ES2136989	0.03	1.18	0.62	1.80	4.25	-	0.14	0.11	0.04	<0.02	-	<0.1	0.02	0.11	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	1.98	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW400	Historical	20 Oct 2022	0990_MW400_2210	ES2238126	0.04	1.50	0.75	2.25	5.45	-	0.14	0.13	0.05	<0.02	-	<0.1	0.02	0.14	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	2.65	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW400	Historical	25 Sep 2023	0990_MW400_230925	ES2333200	0.04	1.24	0.52	1.76	4.02	-	0.12	0.12	0.04	<0.02	-	<0.1	0.02	0.11	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	1.79	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW400	Dry Season	19 Oct 2024	0990_MW400_241019	ES2435779	0.04	1.51	0.70	2.21	2.83	-	0.09	0.12	0.07	<0.02	-	<0.1	0.03	0.11	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.12	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW400	End of Wet	06 May 2025	0990_MW400_250506	ES2513390	0.03	0.75	0.48	1.23	1.54	-	0.06	0.08	0.04	<0.02	-	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW403	Historical	20 Nov 2007	064MW08	A077/3359	<0.8	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW403	Historical	13 Sep 2017	0990_064MW08A_170913	563453	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW403	Historical	22 Sep 2017	0990_064MW08_170923	570292	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW403	Historical	02 Nov 2017	0990_064MW108_171102	571200	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW403	Historical	26 Nov 2017	0990_064MW08_171126	574650	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW403	Historical	18 Dec 2018	0990_064MW08_181218	634367	<0.01	0.02	<0.01	0.02	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW403	Historical	04 Mar 2019	0990_064MW08_190304	644424	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW403	Historical	20 Apr 2021	0990_MW403_210420	ES2115517	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW403	Historical	09 Oct 2021	0990_MW403_211009	ES2136989	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW403	Historical	31 Mar 2023	0990_MW403_230331	ES2311391	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW403	Historical	27 Sep 2023	0990_MW403_230927	ES2333198	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW403	Historical	14 May 2024	0990_MW403_240514	ES2416309	<0.01	0.06	0.06	0.12	0.14	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW403	Dry Season	17 Oct 2024	0990_MW403_241017	ES2435779	0.01	1.25	0.09	1.34	1.37	-	<0.02	<0.02	0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW403	Dry Season	09 Dec 2024	0990_MW403_241209	ES2440429	<0.01	0.02	<0.01	0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW403	End of Wet	08 May 2025	0990_MW403_250508	ES2513390	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW734	Historical	12 May 2017	0990_RN022392_170512	546509	<0.01	<0.01	<0.01	-	-	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW734	Historical	20 Jul 2017	0990_RN022392_170720	555721	<0.01	<0.01	<0.01	-	-	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW734	Historical	23 Sep 2017	0990_RN022392_170923	565020	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW734	Historical	02 Nov 2017	0990_RN022392_171102	571200	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW734	Historical	27 Nov 2017	0990_RN022392_171127	574954	<0.05	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW734	Historical	26 Jan 2018	0990_RN022392_180126	582882	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW734	Historical	21 Mar 2018	0990_RIN022392_180321	590880	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
MW734	Historical	19 Nov 2020	0990_RN022392_201119	ES2041128	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW734	Historical	03 Apr 2023	0990_MW734_230403	ES2311391	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW801S	Historical	21 Oct 2022	0990_MW801S_221021	ES2238125	0.01	0.28	0.17	0.45	0.61	-	0.04	0.02	<0.02	<0.02	-	<0.1	0.03	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW801S	31 Mar 2023		0990_MW801S_230331	ES2311391	0.01	0.26	0.11	0.37	0.45	-	0.03	0.02	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW801S	Historical	17 May 2023	0990_MW801S_230517	ES2316586	0.01	0.26	0.14	0.40	0.47	-	<0.02	0.02	<0.02	<0.02	-	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW801S	Historical	27 Sep 2023	0990_MW801S_230927	ES2333199	0.01	0.26	0.17	0.43	0.53	-	0.03	0.02	<0.02	<0.02	-	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW801S	Historical	14 May 2024	0990_MW801S_240514	ES2416309	0.01	0.25	0.15	0.40	0.50	-	0.03	0.02	<0.02	<0.02	-	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW801S	Dry Season	18 Oct 2024	0990_MW801S_241018	ES2435779	0.01	0.39	0.15	0.54	0.63	-	0.03	0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW801S	End of Wet	08 May 2025	0990_MW801S_250508	ES2513390	<0.01	0.30	0.14	0.44	0.50	-	0.02	0.02	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW802D	Historical	20 Oct 2022	0990_MW802D_221020	ES2238125	0.44	8.79	2.36	11.2	15.0	-	0.42	0.48	0.29	<0.02	-	0.3	0.32	1.37	0.21	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.03	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW802D	Historical	04 Apr 2023	0990_MW802D_230404	ES2311391	0.30	5.91	1.66	7.57	10.1	-	0.33	0.28	0.18	<0.02	-	0.2	0.32	0.80	0.14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW802D	Historical	17 May 2023	0990_MW802D_230517	ES2316586	0.36	6.82	2.14	8.96	12.0	-	0.36	0.37	0.23	<0.02	-	0.2	0.28	1.03	0.17	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW802D	Historical	26 Sep 2023	0990_MW802D_230926	ES2333199	0.21	3.78	1.16	4.94	6.45	-	0.19	0.17	0.12	<0.02	-	<0.1	0.13	0.59	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW802D	Historical	08 May 2024	0990_MW802D_240508	ES2416309	0.38	4.83	1.74	6.57	9.55	-	0.34	0.28	0.18	<0.02	-	0.2	0.23	1.02	0.18	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW802D	Dry Season	19 Oct 2024	0990_MW802D_241019	ES2435779	0.22	2.87	1.24	4.11	6.27	-	0.22	0.27	0.13	<0.02	-	0.2	0.14	0.67	0.13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.10	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW802D	End of Wet	07 May 2025	0990_MW802D_250507	ES2513390	0.14	2.78	0.86	3.64	4.69	-	0.12	0.13	0.09	<0.02	-	<0.1	0.10	0.38	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW802I	Historical	20 Oct 2022	0990_MW802I_221020	ES2238125	7.98	162	52.5	214	279	-	7.30	8.84	5.32	0.04	-	4.0	4.54	22.2	3.33	0.11	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.12	0.17	<0.05	0.40	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW802I	Historical	04 Apr 2023	0990_MW802I_230404	ES2311391	3.20	81.1	28.6	110	143	-	4.14	4.11	3.07	<0.02	-	1.8	2.83	12.2	1.50	0.04	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.06	0.12	<0.05	0.15	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW802I	Historical	17 May 2023	0990_MW802I_230517	ES2316586	5.21	115	32.7	148	191	-	5.02	5.76	3.70	0.05	-	2.7	3.48	14.0	2.42	0.08	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.08	0.16	<0.05	0.30	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW802I	Historical	26 Sep 2023	0990_MW802I_230926	ES2333199	5.12	98.6	33.0	132	174	-	5.12	5.40	3.52	<0.05	-	2.5	3.21	14.8	2.24	0.09	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	0.08	0.17	<0.05	0.29	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12
MW802I	Historical	08 May 2024	0990_MW802I_240508	ES2416309	4.79	78.3	25.3	104	142	-	4.54	4.44	2.60	<0.05	-	2.0	2.68	12.9	2.08	0.06	<0.05	<0.05	<0.05	<0.05	<0.12	<0.05	<0.05	0.06	<0.05	0.23	<0.12	<0.05	<0.12	<0.12	<0.05	<0.12
MW802I	Dry Season	19 Oct 2024	0990_MW802I_241019	ES2435779	3.04	57.4	19.1	76.5	104	-	3.52	3.41	1.63	<0.10	-	1.7	1.96	8.83	1.73	<0.10	<0.10	<0.10	<0.10	<0.10	<0.25	<0.10	0.15	<0.10	<0.10	0.20	<0.25	<0.10	<0.25	<0.25	<0.10	<0.25
MW802I	End of Wet	07 May 2025	0990_MW802I_250507	ES2513390	3.11	61.3	19.8	81.1	108	-	3.06	3.63	2.30	<0.04	-	1.5	1.67	8.83	1.10	<0.04	<0.04	<0.04	<0.04	<0.04	<0.11	<0.05	<0.05	0.09	<0.05	0.20	<0.11	<0.04	<0.11	<0.11	<0.04	<0.11
MW802S	Historical	20 Oct 2022	0990_MW802S_221020	ES2238125	1.31	42.9	13.3	56.2	72.2	-	2.24	2.67	1.35	<0.02	-	1.0	1.18	5.26	0.80	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.05	<0.05	<0.05	0.09	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW802S	Historical	04 Apr 2023	0990_MW802S_230404	ES2311391	0.23	2.75	4.80	7.55	13.5	-	2.34	1.26	0.20	<0.02	-	0.5	<0.02	1.31	0.15	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW802S	Historical	17 May 2023	0990_MW802S_230517	ES2316586	0.37	3.25	9.44	12.7	22.6	-	3.20	2.40	0.32	<0.02	-	0.6	0.58	2.22	0.24	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
MW802S

Table T2
Current and Historical Groundwater Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T2 - Current and Historical Groundwater Analytical Results

					PFAS					PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids											PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexadecanoic acid (PFHxDA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.001	0.0001	0.001	0.001	0.002	0.01	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.001	0.001	0.002	0.005	0.002	0.005	0.005	0.002	0.005
Human Health Receptors																																				
		PFAS in Drinking Water (ADWG 2025)			0.2	0.008	0.03				1																									
		PFAS NEMP 2025 Recreational water quality guideline			10	2	2	2																												
Ecological Receptors																																				
		PFAS NEMP 2025 Freshwater 99%			19	0.00023																														
OTH112	Historical	20 Oct 2022	0990_OTH112_221020	ES2238126	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH112	Historical	26 Sep 2023	0990_OTH112_230926	ES2333200	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH112	Dry Season	23 Oct 2024	0990_OTH112_241023	ES2435779	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH112	End of Wet	07 May 2025	0990_OTH112_250507	ES2513390	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH113	Historical	24 Aug 2017	0990_RN021099_170824	560551	<0.01	0.07	0.08	0.15	0.17	-	0.02	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH113	Historical	17 Oct 2017	0990_RN021099_171017	568584	<0.01	0.11	0.08	0.19	0.24	-	0.02	0.02	<0.01	<0.01	-	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH113	Historical	14 Feb 2018	0990_021099_180214	585712	<0.01	0.11	0.06	0.17	0.2	-	0.02	0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH113	Historical	05 Apr 2018	0990_RN021099_180405	592954	<0.01	0.11	0.07	0.18	0.21	-	0.02	0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH113	Historical	21 Jan 2019	0990_RN021099_190121	637717	<0.01	0.07	0.05	0.12	0.15	-	0.02	0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH113	Historical	21 Apr 2020	0990_RN021099_200421	ES2014306	<0.01	0.09	0.07	0.16	0.16	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH113	Historical	22 Apr 2021	0990_RN021099_210422	ES2115517	<0.01	0.07	0.09	0.16	0.18	-	0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH113	Historical	11 Oct 2021	0990_OTH113_211011	ES2136974	<0.01	0.09	0.08	0.17	0.17	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH113	Historical	20 Oct 2022	0990_OTH113_221020	ES2238127	<0.01	0.15	0.10	0.25	0.25	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH113	Historical	18 Sep 2023	0990_OTH113_230918	ES2332783	<0.01	0.10	0.09	0.19	0.19	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH113	Dry Season	07 Nov 2024	0990_OTH113_241107	ES2436471	<0.01	0.11	0.08	0.19	0.19	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH113	End of Wet	02 May 2025	0990_OTH113_250502	ES2513390	<0.01	0.10	0.08	0.18	0.18	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH114	Historical	11 Oct 2017	0990_RN033019_171011	567472	<0.01	0.14	0.10	0.24	0.27	-	0.01	0.01	<0.01	<0.01	-	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH114	Historical	11 Oct 2017	0990_RN033019_171011	EB1721922	<0.01	0.11	0.09	0.20	0.20	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH114	Historical	02 Nov 2017	0990_RN033019_171102	571200	<0.01	0.16	0.10	0.26	0.3	-	0.01	0.02	<0.01	<0.01	-	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH114	Historical	21 Jan 2019	0990_RN033019_190121	637717	<0.01	0.07	0.03	0.1	0.11	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH114	Historical	02 Apr 2019	0990_RN033019_190402	649215	<0.01	0.02	<0.01	0.02	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH114	Historical	12 Jun 2019	0990_RN033019_190612	661326	<0.01	0.12	0.08	0.2	0.24	<0.01	0.01	0.02	<0.01	<0.01	-	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH114	Historical	31 Oct 2019	0990_RN033019_191031	ES1936083	<0.01	0.04	0.04	0.08	0.08	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH114	Historical	17 Feb 2020	0990_RN033019_200217	ES2005777	<0.01	0.15	0.11	0.26	0.26	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH114	Historical	21 Apr 2020	0990_RN033019_200421	ES2014306	<0.01	0.18	0.15	0.33	0.33	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH114	Historical	22 Jul 2020	0990_RN033019_200720	ES2025129	<0.01	0.16	0.13	0.29	0.35	-	0.02	0.02	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH114	Historical	16 Nov 2020	0990_RN033019_201116	ES2041113	<0.01	0.17	0.16	0.33	0.35	-	<0.02	0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH114	Historical	02 Feb 2021	0990_RN033019_210202	ES2103448	<0.01	0.34	0.22	0.56	0.66	-	0.03	0.04	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH114	Historical	22 Apr 2021	0990_RN033019_210422	ES2115517	<0.01	0.07	0.06	0.13	0.13	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH114	Historical	06 Jul 2021	0990_RN033019_210606	ES2124685	<0.01	0.13	0.08	0.21	0.21	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH114	Historical	10 Oct 2021	0990_OTH114_211010	ES2136974	<0.01	0.19	0.12	0.31	0.31	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH114	Historical	15 Mar 2022	0990_OTH114_220315	ES2209382	<0.01	0.15	0.10	0.25	0.25	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH114	Historical	20 Oct 2022	0990_OTH114_221020	ES2238127	<0.01	0.22	0.15	0.37	0.42	-	<0.02	0.03	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH114	Historical	15 Mar 2023	0990_OTH114_230316	ES2308695	0.01	0.30	0.18	0.48	0.56	-	0.02	0.03	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH114	Historical	18 Sep 2023	0990_OTH114_230918	ES2332783	<0.01	0.19	0.11	0.30	0.32	-	<0.02	0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH114	Historical	12 Mar 2024	0990_OTH114_240312	ES2408294	<0.01	0.14	0.09	0.23	0.23	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH114	Dry Season	30 Oct 2024	0990_OTH114_241030	ES2435728	<0.01	0.08	0.05	0.13	0.21	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.08	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH114	End of Wet	02 May 2025	0990_OTH114_250502	ES2513390	<0.01	0.14	0.08	0.22	0.22	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH115	Historical	23 Apr 2020	0990_RN7807_2004223	ES2014306	<0.01	0.15	0.12	0.27	0.29	-	0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH115	Historical	23 Apr 2021	0990_RN7807_210423	ES2115517	<0.01	0.11	0.10	0.21	0.21	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH115	Historical	08 Oct 2021	0990_OTH115_211008	ES2136583	<0.01	0.13	0.12	0.25	0.27	-	<0.02	0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH115	Historical	20 Oct 2022	0990_OTH115_221020	ES2237744	<0.01	0.15	0.11	0.26	0.26	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH115	Historical	18 Sep 2023	0990_OTH115_230918	ES2332783	<0.01	0.13	0.09	0.22	0.22	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH115	Dry Season	30 Oct 2024	0990_OTH115_241030	ES2435729	<0.01	0.12	0.09	0.21	0.21	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH115	End of Wet	06 May 2025	0990_OTH115_250506	ES2513390	<0.01	0.11	0.07	0.18	0.18	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH117	Historical	30 Nov 2021	0990_OTH117_211130	ES2144035	<0.01	0.01	0.01	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH117	Historical	11 Jan 2022	0990_OTH117_220111	ES2200827	<0.01	0.01	<0.01	0.01	0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH117	Historical	16 Feb 2022	0990_OTH117_220216	ES2205555	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH117	Historical	16 Mar 2022	0990_OTH117_220316	ES2209396	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH117	Historical	28 Apr 2022	0990_OTH117_220428	ES2216005	<0.01	<0.01	0.01	0.01	0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH117	Historical	01 Sep 2022	0990_OTH117_220901	ES2231879	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH117	Historical	17 Nov 2022	0990_OTH117_221117	ES2241722	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH117	Historical	15 Dec 2022	0990_OTH117_221215	ES2245884	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH117	Historical	18 Jan 2023	0990_OTH117_230118	ES2301809	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH117	Historical	15 Feb 2023	0990_OTH117_230215	ES2304947	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH117	Historical	15 Mar 2023	0990_OTH117_230316	ES2308688	<0.01	0.02	0.01	0.03	0.03	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH117	Historical	19 Apr 2023	0990_OTH117_230419	ES2313326	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH117	Historical	24 Aug 2023	0990_OTH117_230824	ES2329042	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH117	Historical	14 Nov 2023	0990_OTH117_231114	ES2340047	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH117	Historical	13 Dec 2023	0990_OTH117_231213	ES2343442	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH117	Historical	13 Feb 2024	0990_OTH117_240213	ES2404922	<0.01	<0.01	0.01	0.01	0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH117	Historical	12 Mar 2024	0990_OTH117_240312	ES2408294	<0.01	0.01	<0.01	0.01	0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH117	Historical	10 Apr 2024	0990_OTH117_240410	ES2412006	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05

Table T2
Current and Historical Groundwater Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T2 - Current and Historical Groundwater Analytical Results

				PFAS					PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids											PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
				Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexadecanoic acid (PFHxDA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR				0.001	0.0001	0.001	0.001	0.002	0.01	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.001	0.001	0.002	0.005	0.002	0.005	0.005	0.002	0.005
Human Health Receptors																																				
		PFAS in Drinking Water (ADWG 2025)		0.2	0.008	0.03				1																										
		PFAS NEMP 2025 Recreational water quality guideline		10	2	2	2																													
Ecological Receptors																																				
		PFAS NEMP 2025 Freshwater 99%		19	0.00023																															
OTH119	End of Wet	14 Apr 2025	0990_OTH119_250414	ES2510860	0.012	0.027	0.004	0.031	0.045	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
OTH120	Historical	20 Oct 2022	0990_OTH120_221024	ES2238128	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH120	Historical	15 Mar 2023	0990_OTH120_230315	ES2308616	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH120	Historical	18 Sep 2023	0990_OTH120_230918	ES2332783	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH120	Dry Season	30 Oct 2024	0990_OTH120_241030	ES2435730	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH120	End of Wet	02 May 2025	0990_OTH120_250502	ES2513390	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT111	Historical	12 Oct 2017	0990_PB077_171012	568029	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
POT111	Historical	21 Apr 2020	0990_MW498_2004	ES2014306	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT111	Historical	22 Apr 2021	0990_POT111_210422	ES2116013	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT111	Historical	11 Oct 2021	0990_POT111_211011	ES2136588	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT111	Historical	20 Oct 2022	0990_POT111_221020	ES2237754	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT111	Historical	18 Sep 2023	0990_POT111_230918	ES2332783	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT111	Dry Season	30 Oct 2024	0990_POT111_241030	ES2435724	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT111	End of Wet	07 May 2025	0990_POT111_250507	ES2513390	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT112	Historical	27 Nov 2017	0990_PB141_171127	574965	<0.05	0.03	0.02	0.05	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
POT112	Historical	21 Jan 2019	0990_PB141_190121	637719	<0.01	0.02	<0.01	0.02	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
POT112	Historical	27 Mar 2019	0990_PB141_190327	648349	<0.01	0.02	0.02	0.04	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
POT112	Historical	12 Jun 2019	0990_PB141_190612	661356	<0.01	0.02	0.02	0.04	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
POT112	Historical	30 Oct 2019	0990_MW555_191030	ES1936032	<0.01	0.01	<0.02	0.01	0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	17 Feb 2020	MW555_200217	ES2005891	<0.01	0.04	0.02	0.06	0.06	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	21 Apr 2020	0990_MW555_200421	ES2014306	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	24 Jul 2020	0990_MW555_200720	ES2025585	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	10 Dec 2020	0990_MW555_201210	ES2045221	<0.01	0.02	<0.02	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	01 Feb 2021	0990_MW555_210201	ES2103411	<0.01	0.03	0.02	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	22 Apr 2021	0990_POT112_210422	ES2116015	<0.01	0.02	<0.02	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	06 Jul 2021	0990_POT112_210606	ES2125153	<0.01	0.02	<0.02	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	30 Nov 2021	0990_POT112_211130	ES2144030	<0.01	0.03	0.02	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	11 Jan 2022	0990_POT112_220115	ES2200822	<0.01	0.03	0.02	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	16 Feb 2022	0990_POT112_220216	ES2205554	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	15 Mar 2022	0990_POT112_220315	ES2209389	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	28 Apr 2022	0990_POT112_220428	ES2216005	<0.01	0.03	0.02	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	31 Aug 2022	0990_POT112_220831	ES2231879	<0.01	0.03	0.02	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	16 Nov 2022	0990_POT112_221116	ES2241722	<0.01	0.03	0.02	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	14 Dec 2022	0990_POT112_221214	ES2245884	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	18 Jan 2023	0990_POT112_230118	ES2301986	0.02	0.22	0.25	0.47	0.72	-	0.05	0.06	<0.02	<0.02	-	<0.1	0.02	0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	15 Feb 2023	0990_POT112_230215	ES2304990	0.01	0.18	0.21	0.39	0.58	-	0.04	0.05	<0.02	<0.02	-	<0.1	<0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	15 Mar 2023	0990_POT112_230315	ES2308596	0.01	0.26	0.18	0.44	0.55	-	0.02	0.03	<0.02	<0.02	-	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	19 Apr 2023	0990_POT112_230419	ES2313326	0.05	0.88	0.67	1.55	2.15	-	0.11	0.12	0.03	<0.02	-	<0.1	0.04	0.23	0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	21 Jun 2023	0990_POT112_230621	ES2320785	<0.01	0.08	0.07	0.15	0.17	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	23 Aug 2023	0990_POT112_230823	ES2329042	<0.01	0.02	0.03	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	13 Nov 2023	0990_POT112_231113	ES2340047	<0.01	0.02	<0.01	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	13 Dec 2023	0990_POT112_231213	ES2343442	<0.01	0.07	0.07	0.14	0.17	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	15 Jan 2024	0990_POT112_240115	ES2401443	0.01	0.19	0.24	0.43	0.61	-	0.04	0.05	<0.02	<0.02	-	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	13 Feb 2024	0990_POT112_240213	ES2404922	0.01	0.21	0.15	0.36	0.49	-	0.03	0.03	<0.02	<0.02	-	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	12 Mar 2024	0990_POT112_240312	ES2408294	<0.01	0.14	0.09	0.23	0.25	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Historical	10 Apr 2024	0990_POT112_240410	ES2412006	<0.01	0.07	0.04	0.11	0.11	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Dry Season	15 Oct 2024	0990_POT112_241015	ES2433852	<0.01	0.04	0.03	0.07	0.07	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Start of Wet	11 Nov 2024	0990_POT112_241111	ES2436928	<0.01	0.07	0.06	0.13	0.13	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Start of Wet	09 Dec 2024	0990_POT112_241209	ES2440543	<0.01	0.05	0.04	0.09	0.09	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	Start of Wet	13 Jan 2025	0990_POT112_250113	ES2501556	<0.01	0.08	0.10	0.18	0.25	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	0.07	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	End of Wet	17 Feb 2025	0990_POT112_250217	ES2504689	0.017	0.251	0.247	0.498	0.809	-	0.051	0.050	0.008	<0.002	<0.005	0.02	0.024	0.112	0.009	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT112	End of Wet	17 Mar 2025	0990_POT112_250317	ES2508368	<0.01	0.23	0.15	0.38	0.46	<0.02	0.02	0.02	<0.02	<0.02	-	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT112	End of Wet	14 Apr 2025	0990_POT112_250414	ES2510860	0.04	0.97	0.66	1.63	2.09	-	0.08	0.10	0.03	<0.02	-	<0.1	0.04	0.17	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT114	Historical	22 Mar 2018	0990_PB232_180322	591534	<0.01	0.06	0.03	0.09	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
POT114	Historical	30 Apr 2018	0990_PB232_180430	597351	<0.01	0.02	0.01	0.03	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
POT114	Historical	27 Mar 2019	0990_PB232_190327	648349	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
POT114	Historical	12 Jun 2019	0990_PB232_190612	661327	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
POT114	Historical	30 Oct 2019	0990_MW642_191030	ES1936037	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT114	Historical	17 Feb 2020	MW642_200217	ES2005891	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT114	Historical	21 Apr 2020	0990_MW642_200421	ES2014306	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT114	Historical	24 Jul 2020	0990_MW642_200720	ES2025576	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT114	Historical	18 Nov 2020	0990_MW642_201118	ES2041111	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT114	Historical	01 Feb 2021	0990_MW642_210201	ES2103410	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT114	Historical	22 Apr 2021	0990_POT114_210422	ES2116021	<0.01	0.11	0.07	0.18	0.18	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT114	Historical	15 Jun 2021	0990_POT114_210615	ES2122181	<0.01	0.05	0.03	0.08	0.08	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05

Table T2
Current and Historical Groundwater Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T2 - Current and Historical Groundwater Analytical Results

				PFAS					PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids											PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
				Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexadecanoic acid (PFHxDA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR				0.001	0.0001	0.001	0.001	0.002	0.01	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.001	0.001	0.002	0.005	0.002	0.005	0.005	0.002	0.005
Human Health Receptors																																				
PFAS in Drinking Water (ADWG 2025)				0.2	0.008	0.03				1																										
PFAS NEMP 2025 Recreational water quality guideline				10	2	2	2																													
Ecological Receptors																																				
PFAS NEMP 2025 Freshwater 99%				19	0.00023																															
POT114	Historical	12 Dec 2023	0990_POT114_231212	ES2343442	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT114	Historical	14 Feb 2024	0990_POT114_240214	ES2404922	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT114	Historical	13 Mar 2024	0990_POT114_240313	ES2408294	<0.01	0.02	<0.01	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT114	Historical	11 Apr 2024	0990_POT114_240411	ES2412006	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT114	Dry Season	30 Oct 2024	0990_POT114_241030	ES2435721	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT114	Start of Wet	12 Nov 2024	0990_POT114_241112	ES2436920	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT114	Start of Wet	11 Dec 2024	0990_POT114_241211	ES2440543	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT114	Start of Wet	14 Jan 2025	0990_POT114_250114	ES2501556	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT114	End of Wet	17 Feb 2025	0990_POT114_250217	ES2504689	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT114	End of Wet	17 Mar 2025	0990_POT114_250317	ES2508369	<0.002	0.008	0.005	0.013	0.013	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT114	End of Wet	14 Apr 2025	0990_POT114_250414	ES2510860	<0.002	0.008	0.004	0.012	0.012	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT119	Historical	11 Aug 2017	0990_PB016_170811	560582	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
POT119	Historical	23 Jan 2019	0990_PB016_190123	637722	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
POT119	Historical	21 Apr 2020	0990_MW445_200421	ES2014306	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT119	Historical	22 Apr 2021	0990_MW445_210422	ES2116011	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	26 Oct 2017	0990_PB092-1_171026	570149	<0.01	0.03	0.02	0.05	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
POT120	Historical	21 Jan 2019	0990_PB092_190121	637723	<0.01	0.02	<0.01	0.02	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
POT120	Historical	27 Mar 2019	0990_PB092_190327	648349	<0.01	0.02	0.01	0.03	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
POT120	Historical	12 Jun 2019	0990_PB092_190612	661353	<0.01	0.01	0.02	0.03	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
POT120	Historical	04 Nov 2019	0990_MW512_191030	ES1936376	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	17 Feb 2020	MW512_200217	ES2005891	<0.01	0.03	<0.02	0.03	0.03	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	21 Apr 2020	0990_MW512_200421	ES2014306	<0.01	0.02	<0.02	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	24 Jul 2020	0990_MW512_200720	ES2025584	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	16 Nov 2020	0990_MW512_201116	ES2041107	<0.01	0.02	<0.02	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	01 Feb 2021	0990_MW512_210201	ES2103413	<0.01	0.02	<0.02	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	22 Apr 2021	0990_MW512_210422	ES2116014	<0.01	0.02	<0.02	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	06 Jul 2021	0990_MW512_210606	ES2125152	<0.01	0.03	0.02	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	11 Oct 2021	0990_POT120_211011	ES2136586	<0.01	0.02	<0.02	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	30 Nov 2021	0990_POT120_211130	ES2144027	<0.01	0.03	0.02	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	11 Jan 2022	0990_POT120_220111	ES2200820	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	16 Feb 2022	0990_POT120_220216	ES2205581	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	15 Mar 2022	0990_POT120_220315	ES2209386	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	28 Apr 2022	0990_POT120_220428	ES2216005	<0.01	0.03	0.02	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	31 Aug 2022	0990_POT120_220831	ES2231879	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	16 Nov 2022	0990_POT120_221116	ES2241722	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	14 Dec 2022	0990_POT120_221214	ES2245884	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	18 Jan 2023	0990_POT120_230118	ES2301982	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	15 Feb 2023	0990_POT120_230215	ES2304936	<0.01	0.03	0.02	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	15 Mar 2023	0990_POT120_230315	ES2308623	<0.01	0.03	0.02	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	18 Apr 2023	0990_POT120_230418	ES2313326	<0.01	0.03	0.03	0.06	0.06	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	26 Jul 2023	0990_POT120_230726	ES2325103	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	22 Aug 2023	0990_POT120_230822	ES2329042	<0.01	0.03	0.02	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	13 Nov 2023	0990_POT120_231113	ES2340047	<0.01	0.03	0.02	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	12 Dec 2023	0990_POT120_231212	ES2343442	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	16 Jan 2024	0990_POT120_240116	ES2401443	<0.01	0.03	0.02	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	14 Feb 2024	0990_POT120_240214	ES2404922	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	13 Mar 2024	0990_POT120_240313	ES2408294	<0.01	0.02	0.01	0.03	0.03	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Historical	10 Apr 2024	0990_POT120_240410	ES2412006	<0.01	0.05	0.03	0.08	0.08	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Dry Season	16 Oct 2024	0990_POT120_241016	ES2433838	<0.01	0.02	0.01	0.03	0.03	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Start of Wet	12 Nov 2024	0990_POT120_241112	ES2436916	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Start of Wet	11 Dec 2024	0990_POT120_241211	ES2440543	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	Start of Wet	13 Jan 2025	0990_POT120_250113	ES2501556	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	End of Wet	17 Feb 2025	0990_POT120_250217	ES2504689	<0.01	0.02	0.01	0.03	0.03	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	End of Wet	18 Mar 2025	0990_POT120_250318	ES2508369	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT120	End of Wet	15 Apr 2025	0990_POT120_250415	ES2510860	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT122	Historical	01 Feb 2018	0990_PB202_180201	583422	<0.01	0.05	0.04	0.09	0.11	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
POT122	Historical	10 Apr 2019	0990_PB202_190410	650885	<0.01	0.03	0.04	0.07	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
POT122	Historical	19 Jun 2019	0990_PB202_190619	662004	<0.01	0.04	0.04	0.08	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
POT122	Historical	30 Oct 2019	0990_MW614_191030	ES1936035	<0.01	0.02	0.04	0.06	0.06	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT122	Historical	17 Feb 2020	MW614_200217	ES2005891	<0.01	0.03	0.03	0.06	0.06	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT122	Historical	21 Apr 2020	0990_MW614_200421	ES2014306	<0.01	0.03	0.04	0.07	0.07	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT122	Historical	24 Jul 2020	0990_MW614_200720	ES2025583	<0.01	0.04	0.05	0.09	0.09	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT122	Historical	18 Nov 2020	0990_MW614_201118	ES2041108	<0.01	0.04	0.04	0.08	0.08	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT122	Historical	02 Feb 2021	0990_MW614_210202	ES2103415

Table T2
Current and Historical Groundwater Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T2 - Current and Historical Groundwater Analytical Results

				PFAS					PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids											PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
				Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexadecanoic acid (PFHxDA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR				0.001	0.0001	0.001	0.001	0.002	0.01	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.001	0.002	0.005	0.002	0.005	0.005	0.002	0.005
Human Health Receptors																																				
PFAS in Drinking Water (ADWG 2025)				0.2	0.008	0.03				1																										
PFAS NEMP 2025 Recreational water quality guideline				10	2	2	2																													
Ecological Receptors																																				
PFAS NEMP 2025 Freshwater 99%				19	0.00023																															
POT124	Start of Wet	12 Nov 2024	0990_POT124_241112	ES2436917	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT124	Start of Wet	11 Dec 2024	0990_POT124_241211	ES2440543	<0.002	0.021	0.014	0.035	0.035	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT124	Start of Wet	14 Jan 2025	0990_POT124_250114	ES2501556	<0.002	0.011	0.011	0.022	0.022	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT124	End of Wet	17 Feb 2025	0990_POT124_250217	ES2504689	<0.002	0.033	0.022	0.055	0.057	-	<0.002	0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT124	End of Wet	17 Mar 2025	0990_POT124_250317	ES2506369	<0.002	0.017	0.008	0.025	0.025	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT124	End of Wet	14 Apr 2025	0990_POT124_250414	ES2510860	<0.002	0.018	0.008	0.026	0.026	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT125	Historical	01 Dec 2021	0990_POT125_211201	ES2144037	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT125	Historical	12 Jan 2022	0990_POT125_220112	ES2200837	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT125	Historical	17 Feb 2022	0990_POT125_220217	ES2205562	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT125	Historical	16 Mar 2022	0990_POT125_220316	ES2209398	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT125	Historical	16 Mar 2022	0990_POT125_TANK_220316	ES2209398	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT125	Historical	28 Apr 2022	0990_POT125_220428	ES2216005	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT125	Historical	31 Aug 2022	0990_POT125_220831	ES2231879	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT125	Historical	16 Nov 2022	0990_POT125_221116	ES2241722	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT125	Historical	14 Dec 2022	0990_POT125_221214	ES2245884	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT125	Historical	18 Jan 2023	0990_POT125_230118	ES2301977	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT125	Historical	15 Feb 2023	0990_POT125_230215	ES2304959	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT125	Historical	15 Mar 2023	0990_POT125_230315	ES2308481	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT125	Historical	19 Apr 2023	0990_POT125_230419	ES2313326	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT125	Historical	24 Aug 2023	0990_POT125_230824	ES2329042	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT125	Historical	13 Nov 2023	0990_POT125_231113	ES2340047	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT125	Historical	12 Dec 2023	0990_POT125_231212	ES2343442	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT125	Historical	15 Jan 2024	0990_POT125_240115	ES2401443	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT125	Historical	13 Feb 2024	0990_POT125_240213	ES2404922	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT125	Historical	12 Mar 2024	0990_POT125_240312	ES2408294	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT125	Historical	10 Apr 2024	0990_POT125_240410	ES2412006	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT125	Dry Season	16 Oct 2024	0990_POT125_241016	ES2433840	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT125	Start of Wet	12 Nov 2024	0990_POT125_241112	ES2436906	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT125	Start of Wet	09 Dec 2024	0990_POT125_241209	ES2440543	<0.002	<0.002	<0.002	<0.002	0.013	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	0.013	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT125	Start of Wet	13 Jan 2025	0990_POT125_250113	ES2501556	<0.002	0.003	0.003	0.006	0.022	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	0.016	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT125	End of Wet	17 Feb 2025	0990_POT125_250217	ES2504689	<0.002	0.004	0.003	0.007	0.007	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT125	End of Wet	17 Mar 2025	0990_POT125_250317	ES2508368	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT125	End of Wet	14 Apr 2025	0990_POT125_250414	ES2510860	<0.002	<0.002	<0.002	<0.002	0.024	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	0.024	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT126	Historical	01 Dec 2021	0990_POT126_211201	ES2144038	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT126	Historical	12 Jan 2022	0990_POT126_220112	ES2200838	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT126	Historical	17 Feb 2022	0990_POT126_220217	ES2205566	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT126	Historical	16 Mar 2022	0990_POT126_220316	ES2209385	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT126	Historical	28 Apr 2022	0990_POT126_220428	ES2216005	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT126	Historical	31 Aug 2022	0990_POT126_220831	ES2231879	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT126	Historical	16 Nov 2022	0990_POT126_221116	ES2241722	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT126	Historical	14 Dec 2022	0990_POT126_221214	ES2245884	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT126	Historical	18 Jan 2023	0990_POT126_230118	ES2301983	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT126	Historical	15 Feb 2023	0990_POT126_230215	ES2304961	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT126	Historical	15 Mar 2023	0990_POT126_230315	ES2308554	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT126	Historical	19 Apr 2023	0990_POT126_230419	ES2313326	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT126	Historical	22 Aug 2023	0990_POT126_230822	ES2329042	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT126	Historical	13 Nov 2023	0990_POT126_231113	ES2340047	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT126	Historical	10 Apr 2024	0990_POT126_240410	ES2412006	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT126	Dry Season	15 Oct 2024	0990_POT126_241015	ES2433847	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT126	Start of Wet	12 Nov 2024	0990_POT126_241112	ES2436914	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT126	Start of Wet	09 Dec 2024	0990_POT126_241209	ES2440543	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT126	Start of Wet	13 Jan 2025	0990_POT126_250113	ES2501556	<0.002	0.003	<0.002	0.003	0.003	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT126	End of Wet	17 Feb 2025	0990_POT126_250217	ES2504689	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT126	End of Wet	17 Mar 2025	0990_POT126_250317	ES2508368	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT126	End of Wet	14 Apr 2025	0990_POT126_250414	ES2510860	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT127	Historical	01 Dec 2021	0990_POT127_211201	ES2144041	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT127	Historical	11 Jan 2022	0990_POT127_220111	ES2200832	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT127	Historical	17 Feb 2022	0999_POT127_220217	ES2205565	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT127	Historical	16 Mar 2022	0990_POT127_220316	ES2209388	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT127	Historical	28 Apr 2022	0990_POT127_220428	ES2216005	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT127	Historical	01 Sep 2022	0990_POT127_220901	ES2231879	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT127	Historical	16 Nov 2022	0990_POT127_221116	ES2241722	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT127	Historical	14 Dec 2022	0990_POT127_221214	ES2245884	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.

Table T2
Current and Historical Groundwater Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T2 - Current and Historical Groundwater Analytical Results

					PFAS					PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids											PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexadecanoic acid (PFHxDA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.001	0.0001	0.001	0.001	0.002	0.01	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.001	0.001	0.002	0.005	0.002	0.005	0.005	0.002	0.005
Human Health Receptors																																				
PFAS in Drinking Water (ADWG 2025)					0.2	0.008	0.03				1																									
PFAS NEMP 2025 Recreational water quality guideline					10	2	2	2																												
Ecological Receptors																																				
PFAS NEMP 2025 Freshwater 99%					19	0.00023																														
POT129	Historical	15 Jan 2024	0990_POT129_240115	ES2401443	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT129	Historical	13 Feb 2024	0990_POT129_240213	ES2404922	<0.01	0.03	0.01	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT129	Historical	12 Mar 2024	0990_POT129_240312	ES2408294	<0.01	0.02	<0.01	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.10	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT129	Historical	10 Apr 2024	0990_POT129_240410	ES2412006	<0.01	0.01	<0.01	0.01	0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT129	Dry Season	15 Oct 2024	0990_POT129_241015	ES2433850	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT129	Start of Wet	11 Nov 2024	0990_POT129_241111	ES2436927	<0.01	0.01	<0.01	0.01	0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT129	Start of Wet	09 Dec 2024	0990_POT129_241209	ES2440543	<0.002	0.011	0.009	0.020	0.044	-	0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	0.022	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT129	Start of Wet	13 Jan 2025	0990_POT129_250113	ES2501556	<0.002	0.038	0.023	0.061	0.077	-	0.004	0.003	0.003	<0.002	<0.005	<0.01	<0.002	0.006	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT129	End of Wet	17 Feb 2025	0990_POT129_250217	ES2504689	<0.002	0.015	0.010	0.025	0.025	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT129	End of Wet	17 Mar 2025	0990_POT129_250317	ES2508369	<0.002	0.010	0.008	0.018	0.018	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT129	End of Wet	14 Apr 2025	0990_POT129_250414	ES2510860	<0.002	0.010	0.007	0.017	0.017	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT130	Historical	16 Feb 2022	0990_POT130_220216	ES2205558	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT130	Historical	08 Aug 2023	0990_POT130_230808	ES2326924	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT130	Historical	14 Nov 2023	0990_POT130_231114	ES2340047	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT130	Historical	13 Dec 2023	0990_POT130_231213	ES2343442	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT130	Historical	16 Jan 2024	0990_POT130_240116	ES2401443	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT130	Historical	14 Feb 2024	0990_POT130_240214	ES2404922	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT130	Historical	13 Mar 2024	0990_POT130_240313	ES2408294	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT130	Historical	11 Apr 2024	0990_POT130_240411	ES2412006	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT130	Dry Season	16 Oct 2024	0990_POT130_241016	ES2433842	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT130	Start of Wet	12 Nov 2024	0990_POT130_241112	ES2436904	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT130	Start of Wet	11 Dec 2024	0990_POT130_241211	ES2440543	<0.002	<0.002	<0.002	<0.002	0.040	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	0.040	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT130	Start of Wet	14 Jan 2025	0990_POT130_250114	ES2501556	<0.002	<0.002	0.004	0.004	0.004	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT130	End of Wet	17 Feb 2025	0990_POT130_250217	ES2504689	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT130	End of Wet	18 Mar 2025	0990_POT130_250318	ES2508369	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT130	End of Wet	15 Apr 2025	0990_POT130_250415	ES2510860	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT131	Historical	01 Sep 2022	0990_POT131_220901	ES2231879	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT131	Historical	21 Jun 2023	0990_POT131_230621	ES2320785	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT131	Historical	23 Aug 2023	0990_POT131_230823	ES2329042	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT131	Historical	13 Nov 2023	0990_POT131_231113	ES2340047	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT131	Historical	12 Dec 2023	0990_POT131_231212	ES2343442	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT131	Historical	15 Jan 2024	0990_POT131_240115	ES2401443	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT131	Historical	13 Feb 2024	0990_POT131_240213	ES2404922	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT131	Historical	12 Mar 2024	0990_POT131_240312	ES2408294	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT131	Historical	10 Apr 2024	0990_POT131_240410	ES2412006	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT131	Dry Season	15 Oct 2024	0990_POT131_241015	ES2433851	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT131	Start of Wet	12 Nov 2024	0990_POT131_241112	ES2436923	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT131	Start of Wet	09 Dec 2024	0990_POT131_241209	ES2440543	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT131	Start of Wet	13 Jan 2025	0990_POT131_250113	ES2501556	<0.002	0.002	0.004	0.006	0.006	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT131	End of Wet	17 Feb 2025	0990_POT131_250217	ES2504689	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT131	End of Wet	17 Mar 2025	0990_POT131_250317	ES2508369	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT131	End of Wet	30 Apr 2025	0990_POT131_250430	ES2513390	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT198	Historical	22 Aug 2023	0990_POT198_230822	ES2329042	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT198	Historical	14 Nov 2023	0990_POT198_231114	ES2340047	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT198	Historical	12 Dec 2023	0990_POT198_231212	ES2343442	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT198	Historical	16 Jan 2024	0990_POT198_240116	ES2401443	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT198	Historical	14 Feb 2024	0990_POT198_240214	ES2404922	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT198	Historical	13 Mar 2024	0990_POT198_240313	ES2408294	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT198	Historical	11 Apr 2024	0990_POT198_240411	ES2412006	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT198	Dry Season	16 Oct 2024	0990_POT198_241016	ES2433843	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT198	Start of Wet	12 Nov 2024	0990_POT198_241112	ES2436921	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT198	Start of Wet	11 Dec 2024	0990_POT198_241211	ES2440543	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT198	Start of Wet	14 Jan 2025	0990_POT198_250114	ES2501556	<0.002	<0.002	0.003	0.003	0.003	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT198	End of Wet	17 Feb 2025	0990_POT198_250217	ES2504689	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT198	End of Wet	18 Mar 2025	0990_POT198_250318	ES2508369	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT198	End of Wet	14 Apr 2025	0990_POT198_250414	ES2510860	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
POT201	Historical	22 Aug 2023	0990_POT201_230822	ES2329042	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT201	Historical	14 Nov 2023	0990_POT201_231114	ES2340047	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT201	Historical	12 Dec 2023	0990_POT201_231212	ES2343442	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT201	Historical	15 Jan 2024	0990_POT201_240115	ES2401443	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT201	Historical	13 Feb 2024	0990_POT201_240213	ES2404922	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT201	Historical	12 Mar 2024	0990_POT201_240312	ES2408294	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
POT201	Historical	10 Apr 2024	0990_POT201_240410	ES2412006	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

Table T3 - Current and Historical Surface Water Field Results

AECOM

Site	Location	Sampled Date	DO (Field)	Temperature (Field)	Redox Potential	Redox Potential Corrected	Electrical Conductivity (field)	pH (Field)
			mg/L	°C	mV	mV	µS/cm	pH Units
0990	OTH008	18/02/2020	4.56	29.3	622.8	822.80	2,824	7.01
0990	OTH008	20/07/2020	6.61	26.6	542.8	742.80	2,621	7.09
0990	OTH008	16/11/2020	3.66	32.3	557	757.00	3,479	7.48
0990	OTH008	2/02/2021	-	30.4	501.6	701.60	2,358	7.83
0990	OTH008	6/07/2021	5.54	25.6	555.5	755.50	1,664	7.36
0990	OTH008	20/12/2021	4.01	28.8	509.6	709.60	2,197	7.14
0990	OTH008	16/03/2022	5.43	31.1	111.3	311.30	217.8	7.63
0990	OTH008	14/06/2022	8.9	22.3	666.9	866.90	2,450	6.42
0990	OTH008	17/01/2023	4.34	31.5	198.6	398.60	2,013	6.88
0990	OTH008	3/04/2023	1.12	29.5	-	-	1,937	6.92
0990	OTH008	24/07/2023	5.71	23.7	-	-	1,829	6.7
0990	OTH008	18/09/2023	5.22	30.1	-	-	2,090	7.79
0990	SW016	31/10/2019	5.03	24.3	76.2	276.20	665	-
0990	SW016	17/12/2020	-	28.5	163.4	363.40	142	7.47
0990	SW016	21/04/2021	2.59	34.8	32.7	232.70	593	8.12
0990	SW016	21/12/2021	2.34	26.5	105	305.00	380.6	6.62
0990	SW016	14/11/2022	1.81	30.2	68.2	268.20	171.2	7.53
0990	SW016	15/02/2023	3.91	34.6	-	-	-	8.11
0990	SW016	24/02/2023	2.88	28.6	-	-	95.8	6.17
0990	SW016	28/02/2023	3.35	27.3	-	-	201.5	6.99
0990	SW016	2/03/2023	3.67	28.2	-	-	197.5	7.92
0990	SW016	23/08/2023	2.06	32.5	81	281.00	186.6	7.34
0990	SW016	23/08/2023	2.34	30.4	94	294.00	137.1	6.77
0990	SW016	23/08/2023	2.39	31	99.5	299.50	122.3	6.71
0990	SW016	23/08/2023	1.46	31.9	103.6	303.60	134.7	6.37
0990	SW016	23/08/2023	2	33.2	71.3	271.30	126.6	7.15
0990	SW016	14/11/2023	2.08	31.8	66.8	266.80	199.6	7.23
0990	SW016	12/02/2024	4.77	28.1	12.4	212.40	269.3	7.88
0990	SW016	4/12/2024	0.68	27.7	-14.3	185.70	192.4	7.16
0990	SW016	1/04/2025	1.50	29.30	52.6	252.60	728.00	8.39
0990	SW021	17/12/2020	1.85	30.80	134.2	334.20	152.90	7.75
0990	SW021	20/12/2021	2.78	28.40	87.9	287.90	126.10	7.38
0990	SW021	28/02/2023	4.27	26.80	-	-	175.80	7.65
0990	SW021	1/04/2025	1.49	29.80	51.1	251.10	852.00	8.51
0990	SW049	21/12/2021	5.58	24.40	108.5	308.50	51.00	7.42
0990	SW049	28/02/2023	4.61	30.50	-	-	127.20	7.72
0990	SW049	13/12/2023	4.23	35.80	-	-	135.90	8.99
0990	SW049	13/02/2024	6.27	30.60	-36.8	163.20	-	8.54
0990	SW049	1/04/2025	1.23	27.60	66.2	266.20	393.80	8.34
0990	SW100	30/10/2019	6.18	21.20	51.8	251.80	36.20	-
0990	SW100	30/10/2019	1.91	31.40	66	266.00	811.00	-
0990	SW100	16/11/2020	4.21	33.40	180.9	380.90	801.00	7.60
0990	SW100	16/12/2020	4.00	28.50	131	331.00	49.60	7.89
0990	SW100	20/12/2021	3.85	30.30	142.4	342.40	221.60	7.19
0990	SW100	16/03/2022	4.15	27.90	-10.2	189.80	72.50	7.47
0990	SW100	29/03/2023	0.88	-	-	-	83.20	6.50
0990	SW100	18/09/2023	4.33	30.20	-	-	665.00	7.68
0990	SW100	18/09/2023	4.33	30.20	-	-	665.00	7.68
0990	SW100	30/10/2024	7.18	33.20	151	351.00	586.00	5.27
0990	SW100	19/03/2025	3.74	31.10	119.1	319.10	62.30	7.16
0990	SW108	31/10/2019	6.61	30.20	462.2	662.20	2843.00	-
0990	SW108	20/07/2020	4.96	26.70	208.9	408.90	446.90	6.93
0990	SW108	16/11/2020	1.00	31.50	182	382.00	546.00	7.86
0990	SW108	1/02/2021	3.97	30.80	-	-	37.10	8.67
0990	SW108	6/07/2021	4.21	24.70	100.4	300.40	248.30	7.29
0990	SW108	30/11/2021	4.45	29.20	136.7	336.70	62.90	7.72
0990	SW108	20/12/2021	3.95	29.80	144.9	344.90	107.10	7.56
0990	SW108	16/03/2022	4.40	32.30	-14.1	185.90	61.00	7.46
0990	SW108	14/06/2022	5.44	25.30	211	411.00	419.40	7.14
0990	SW108	18/01/2023	5.13	28.80	106.3	306.30	29.70	7.75
0990	SW108	3/04/2023	1.14	31.20	-	-	215.30	6.90
0990	SW108	25/07/2023	5.30	23.40	-	-	284.90	6.07
0990	SW108	18/09/2023	2.97	29.10	-	-	479.40	7.32
0990	SW108	30/10/2024	5.96	33.80	137.5	337.50	420.90	5.27
0990	SW108	13/01/2025	7.54	34.00	91	291.00	113.20	7.91
0990	SW108	19/03/2025	3.98	31.20	116.5	316.50	51.00	7.15
0990	SW108	19/06/2024	4.65	28.30	103.00	191.90	391.90	7.13
0990	SW110	16/11/2020	3.79	34.90	157.6	357.60	118.40	7.76
0990	SW110	17/12/2020	4.77	28.20	149.9	349.90	26.70	7.90
0990	SW110	20/12/2021	3.85	29.00	128.5	328.50	44.60	7.55
0990	SW110	16/03/2022	6.44	30.70	-6.1	193.90	29.30	7.60
0990	SW110	29/03/2023	0.94	32.30	-	-	25.20	6.25
0990	SW110	18/09/2023	2.91	28.90	-	-	193.40	7.26
0990	SW110	30/10/2024	6.59	33.60	145.2	345.20	161.20	5.27
0990	SW110	19/03/2025	3.84	32.10	100.4	300.40	58.60	7.24
0990	SW140	20/12/2021	4.28	26.90	91.5	291.50	36.30	7.59
0990	SW140	28/02/2023	4.37	30.90	-	-	95.00	7.46
0990	SW140	13/12/2023	-	35.30	-	-	346.90	8.34
0990	SW140	13/02/2024	5.38	30.60	-32.5	167.50	56.60	8.05
0990	SW140	1/04/2025	1.51	31.10	58	258.00	414.20	8.32
0990	SW151	31/10/2019	4.72	31.20	131.7	331.70	589.00	-
0990	SW151	16/11/2020	4.01	34.10	184.4	384.40	775.00	7.79
0990	SW151	16/12/2020	4.05	28.90	125.5	325.50	78.20	8.26
0990	SW153	21/07/2020	2.83	26.50	209.8	409.80	753.00	7.03
0990	SW153	16/11/2020	1.17	32.30	200.4	400.40	904.00	7.53
0990	SW153	1/02/2021	2.58	31.70	-	-	851.00	7.88
0990	SW153	6/07/2021	2.08	26.70	65.8	265.80	735.00	7.43

Table T3 - Current and Historical Surface Water Field Results

AECOM

Site	Location	Sampled Date	DO (Field)	Temperature (Field)	Redox Potential	Redox Potential Corrected	Electrical Conductivity (field)	pH (Field)
			mg/L	°C	mV	mV	µS/cm	pH Units
0990	SW153	30/11/2021	1.88	30.10	141.9	341.90	809.00	6.88
0990	SW153	20/12/2021	2.37	29.70	192.7	392.70	846.00	6.63
0990	SW153	16/03/2022	3.18	29.20	17.2	217.20	705.00	7.56
0990	SW153	14/06/2022	2.98	31.10	98.8	298.80	803.00	6.97
0990	SW153	17/01/2023	1.75	32.00	136.6	336.60	823.00	6.89
0990	SW153	3/04/2023	0.53	30.20	-	-	695.30	6.92
0990	SW153	26/07/2023	3.96	28.00	-	-	-	6.46
0990	SW153	18/09/2023	2.97	29.80	-	-	785.00	7.43
0990	SW153	19/06/2024	2.91	30.40	109.30	309.30	825.00	6.84
0990	SW153	30/10/2024	4.45	32.50	153.4	353.40	683.00	5.13
0990	SW153	13/01/2025	4.13	32.80	113.5	313.50	809.00	8.17
0990	SW153	4/03/2025	2.29	31.30	116.7	316.70	699.00	7.20
0990	SW161	30/10/2019	5.52	30.90	206.8	406.80	200.60	-
0990	SW161	17/11/2020	3.27	34.80	110.3	310.30	111.90	8.39
0990	SW161	17/12/2020	4.10	28.40	128.8	328.80	46.20	8.30
0990	SW161	20/12/2021	4.02	29.80	132.1	332.10	36.70	7.49
0990	SW161	16/03/2022	4.35	31.10	-42.4	157.60	44.50	7.44
0990	SW161	29/03/2023	0.64	32.00	-	-	63.00	6.59
0990	SW161	18/09/2023	4.02	30.90	-	-	85.40	7.84
0990	SW161	1/11/2024	5.33	31.30	105.6	305.60	79.30	5.34
0990	SW161	19/03/2025	4.34	31.50	106.1	306.10	40.70	7.24
0990	SW188	31/10/2019	3.87	30.70	26.2	226.20	32.40	-
0990	SW188	17/12/2020	-	30.00	122.6	322.60	120.90	8.50
0990	SW188	17/12/2020	3.63	30.00	122.6	322.60	120.90	8.50

Table T4
Current and Historical Surface Water Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T4 - Current and Historical Surface Water Analytical Results

					PFAS					PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids											PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluoroheadecanoic acid (PFHxDA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.001	0.0001	0.001	0.001	0.002	0.01	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.001	0.001	0.002	0.005	0.002	0.005	0.005	0.002	0.005
Human Receptors																																				
PFAS in Drinking Water (ADWG 2025)					0.2	0.008	0.03				1																									
PFAS NEMP 2025 Recreational water quality guideline					10	2	2	2																												
Ecological Receptors																																				
PFAS NEMP 2025 Freshwater 99%					19	0.00023																														
Location Cod	**Date**	**Project ID**	**Field ID**	**Lab Report Number**																																
OTH008	07 Sep 2017	NT_0990_PFAS	0990_PB043_170907	562587	0.01	0.29	0.31	0.6	0.87	-	0.07	0.07	0.02	<0.01	-	<0.05	0.02	0.08	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	28 Sep 2017	NT_0990_PFAS	0990_PB043_170928	565650	0.02	0.42	0.42	0.84	1.17	-	0.07	0.08	0.02	<0.01	-	<0.05	0.03	0.11	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	11 Oct 2017	NT_0990_PFAS	0990_PB043N_171011	567472	0.01	0.36	0.34	0.7	0.97	-	0.07	0.06	0.02	<0.01	-	<0.05	0.02	0.09	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	11 Oct 2017	NT_0990_PFAS	0990_PB0435_171011	567472	0.02	0.34	0.33	0.67	0.96	-	0.07	0.06	0.02	<0.01	-	<0.05	0.03	0.09	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	22 Nov 2017	NT_0990_PFAS	0990_PB043_171122	574367	<0.01	0.09	0.10	0.19	0.27	-	0.02	0.03	<0.01	<0.01	-	<0.05	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	21 Dec 2017	NT_0990_PFAS	0990_PB043_171221	580452	<0.01	0.05	0.06	0.11	0.15	-	0.01	0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	15 Jan 2018	NT_0990_PFAS	0990_PB043_180115	581310	<0.01	0.05	0.06	0.11	0.16	-	0.01	0.02	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	30 Jan 2018	NT_0990_PFAS	0990_PB043_180130	583207	<0.01	0.04	0.05	0.09	0.12	-	0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	12 Feb 2018	NT_0990_PFAS	0990_PB043_180212	585138	<0.01	0.03	0.05	0.08	0.11	-	0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	26 Feb 2018	NT_0990_PFAS	0990_PB043_180226	587068	<0.01	0.03	0.04	0.07	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	12 Mar 2018	NT_0990_PFAS	0990_PB043_180312	589482	<0.01	0.03	0.04	0.07	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	04 Apr 2018	NT_0990_PFAS	0990_PB043_180404	592957	<0.01	0.04	0.04	0.08	0.12	-	0.01	0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	23 Apr 2018	NT_0990_PFAS	0990_PB043_180423	596114	<0.01	0.04	0.04	0.08	0.11	-	0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	04 May 2018	NT_0990_PFAS	0990_PB043_180504	598570	<0.01	0.05	0.06	0.11	0.17	-	0.01	0.01	<0.01	<0.01	-	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	20 Jun 2018	NT_0990_PFAS	0990_PB043_180620	604664	<0.01	0.05	0.05	0.1	0.14	-	0.01	0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	16 Jul 2018	NT_0990_PFAS	0990_PB043_180716	608539	<0.01	0.05	0.06	0.11	0.15	-	0.01	0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	07 Aug 2018	NT_0990_PFAS	0990_PB043_180807	611483	<0.01	0.06	0.06	0.12	0.17	-	0.01	0.01	<0.01	<0.01	-	<0.05	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	16 Aug 2018	NT_0990_PFAS	0990_PB043_180816	613201	<0.01	0.05	0.04	0.09	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	13 Sep 2018	NT_0990_PFAS	0990_PB043_180913	618146	<0.01	0.05	0.06	0.11	0.15	-	0.01	0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	25 Sep 2018	NT_0990_PFAS	0090_PB043_180925	620163	<0.01	0.06	0.07	0.13	0.18	-	0.01	0.02	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	11 Oct 2018	NT_0990_PFAS	0990_PB043_181011	622536	<0.01	0.04	0.05	0.09	0.12	-	0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	12 Dec 2018	NT_0990_PFAS	0990_PB043_181212	633267	<0.01	0.05	0.05	0.1	0.15	-	0.01	0.01	<0.01	<0.01	-	<0.05	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	28 Feb 2019	NT_0990_PFAS	0990_PB043_190228	644424	<0.01	0.01	0.03	0.04	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	27 Mar 2019	NT_0990_PFAS	0990_PB043_190327	648349	<0.01	0.02	0.03	0.05	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	12 Jun 2019	NT_0990_PFAS	0990_PB043_190612	661334	<0.01	0.03	0.04	0.07	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	31 Oct 2019	NT_0990_PFASOMP	0990_OTH008_191031	ES1936083	<0.01	0.04	0.06	0.10	0.13	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH008	18 Feb 2020	NT_0990_PFASOMP	0990_OTH008_200217	ES2005777	<0.01	0.04	0.05	0.09	0.11	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH008	27 May 2020	NT_0990_PFASOMP	0990_OTH008_200527	ES2018815	<0.01	0.03	0.05	0.08	0.11	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH008	22 Jul 2020	NT_0990_PFASOMP	0990_OTH008_200720	ES2025129	<0.01	0.02	0.04	0.06	0.09	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH008	16 Nov 2020	NT_0990_PFASOMP	0990_OTH008_201116	ES2041113	<0.01	0.02	0.05	0.07	0.09	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH008	02 Feb 2021	NT_0990_PFASOMP	0990_OTH008_210202	ES2103448	<0.01	0.02	0.03	0.05	0.07	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH008	21 Apr 2021	NT_0990_PFASOMP	0990_OTH008_210421	ES2115517	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH008	06 Jul 2021	NT_0990_PFASOMP	0990_OTH008_210606	ES2124685	<0.01	0.10	0.10	0.20	0.25	-	0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH008	10 Oct 2021	NT_0990_PFASOMP	0990_OTH008_211010	ES2136974	<0.01	0.06	0.08	0.14	0.17	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH008	20 Dec 2021	NT_0990_PFASOMP	0990_OTH008_211220	ES2146863	<0.01	0.05	0.06	0.11	0.14	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH008	16 Mar 2022	NT_0990_PFASOMP	0990_OTH008_220316	ES2209382	<0.01	0.05	0.05	0.10	0.13	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH008	14 Jun 2022	NT_0990_PFASOMP	0990_OTH008_220614	ES2221046	<0.01	0.10	0.07	0.17	0.20	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH008	24 Oct 2022	NT_0990_PFASOMP	0990_OTH008_221024	ES2238127	<0.01	0.04	0.06	0.10	0.13	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH008	17 Jan 2023	NT_0990_PFASOMP_23	0990_OTH008_230117	ES2301808	<0.01	0.02	0.03	0.05	0.07	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH008	03 Apr 2023	NT_0990_PFASOMP_23	0990_OTH008_230403	ES2311363	<0.01	0.02	0.03	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH008	24 Jul 2023	NT_0990_PFASOMP_23	0990_OTH008_230724	ES2325102	<0.01	0.04	0.03	0.07	0.07	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH008	18 Sep 2023	NT_0990_PFASOMP_23	0990_OTH008_230918	ES2332783	<0.01	0.03	0.04	0.07	0.07	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
OTH008	16 Jan 2024	NT_0990_PFASOMP_24	0990_OTH008_240116	ES2401443	<0.01	0.03	0.03	0.06	0.06	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Apr 2014	NT_Historical_202001	TDLWAT3	414191	<0.1	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SW016	06 Jun 2016	NT_Historical_202001	TDL WAT 3	ES1612480	<0.01	0.39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	-
SW016	01 May 2017	NT_0990_PFAS	0990_SW16_17/05/01	544592	0.03	0.92	0.44	-	-	-	0.07	0.06	0.04	<0.01	-	<0.05	0.03	0.11	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW016	20 Jan 2018	NT_0990_PFAS	0990_SW121_180120	581624	0.02	0.80	0.23	1.03	1.29	-	0.05	0.05	0.02	<0.01	-	<0.05	0.03	0.08	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW016	16 Feb 2018	NT_0990_PFAS	0990_SW016_180216	585791	0.02	0.61	0.22	0.83	1.05	-	0.04	0.03	0.02	<0.01	-	<0.05	0.03	0.07	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW016	23 Feb 2018	NT_0990_PFAS	0990_SW016_180223	587068	0.04	1.2	0.53	1.73	2.14	-	0.08	0.08	0.04	<0.01	-	<0.05	0.03	0.12	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW016	02 Mar 2018	NT_0990_PFAS	0990_SW016_180302	587931	0.05	1.0	0.67	1.67	2.14	-	0.08	0.09	0.05	<0.01	-	<0.05	0.04	0.14	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW016	09 Mar 2018	NT_0990_PFAS	0990_SW016_180309	589220	0.03	1.3	0.51	1.81	2.2	-	0.07	0.08	0.04	<0.01	-	<0.05	0.03	0.12	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW016	04 Apr 2018	NT_0990_PFAS	0990_SW016_180404	592957	0.03	1.2	0.44	1.64	2.01	-	0.06	0.09	0.03	<0.01	-	<0.05	0.03	0.11	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW016	12 Dec 2018	NT_0990_PFAS	0990_SW016_181212	633267	0.02	0.78	0.20	0.98	1.15	-	0.02	0.02	0.01	<0.01	-	<0.05	0.04	0.05	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW016	27 Mar 2019	NT_0990_PFAS	0990_SW016_190327	648349	<0.01	0.33	0.07	0.4	0.44	<0.01	<0.01	0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW016	22 Apr 2020	NT_0990_PFASOMP	0990_SW016_200422	ES2014275	<0.01	0.51	0.06	0.57	0.57	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	16 Dec 2020	NT_0990_PFASOMP	0990_SW016_201216	ES2044940	<0.01	0.37	0.03	0.40	0.40	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	12 Feb 2021	NT_0990_PFASMGMT	0990_SW016_210212	773966	<0.01	0.21	0.02	0.23	0.23	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW016	24 Mar 2021	NT_0990_PFASMGMT	0990_SW016_210324	785172	0.04	0.56	0.52	1.08	1.51	0.04	0.09	0.08	0.02	<0.01	-	<0.05	0.04	0.10	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW016	21 Apr 2021	NT_0990_PFASOMP	0990_SW016_210421	ES2115517	0.03	0.61	0.52	1.13	1.51	-	0.06	0.06	0.03	<0.01	-	<0.1	0.06	0.12	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW016	20 Dec 2021	NT_0990_PFASOMP	0990_SW016_211220	ES2146720	0.02	0.42	0.16	0.58	0.76	-	0.05	0.03	<0.02	<0.02	-	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	25 Feb 2022	NT_0990_PFASOMP	0990_SW016_220225	ES2207188	0.02	0.65	0.15	0.80	0.90	-	0.03	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	15 Mar 2022	NT_0990_PFASOMP

Table T4
Current and Historical Surface Water Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T4 - Current and Historical Surface Water Analytical Results

				PFAS					PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids											PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
				Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluoroheadecanoic acid (PFHxDA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (PFOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR				0.001	0.0001	0.001	0.001	0.002	0.01	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.005	0.002	0.005	0.005	0.002	0.005
Human Receptors																																				
PFAS in Drinking Water (ADWG 2025)				0.2	0.008	0.03				1																										
PFAS NEMP 2025 Recreational water quality guideline				10	2	2	2																													
Ecological Receptors																																				
PFAS NEMP 2025 Freshwater 99%				19	0.00023																															
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_04_230211	ES2305027	<0.01	0.17	0.02	0.19	0.19	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_05_230211	ES2305027	<0.01	0.19	0.02	0.21	0.21	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_06_230211	ES2305027	<0.01	0.19	0.01	0.20	0.20	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_07_230211	ES2305027	<0.01	0.14	0.01	0.15	0.15	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_08_230211	ES2305027	<0.01	0.11	0.01	0.12	0.12	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_09_230211	ES2305027	<0.01	0.09	0.02	0.11	0.11	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_10_230211	ES2305027	<0.01	0.10	0.01	0.11	0.11	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_11_230211	ES2305027	<0.01	0.10	0.02	0.12	0.12	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_12_230211	ES2305027	<0.01	0.09	0.02	0.11	0.11	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_13_230211	ES2305027	<0.01	0.09	0.02	0.11	0.11	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_14_230211	ES2305027	<0.01	0.08	0.02	0.10	0.10	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_15_230211	ES2305027	<0.01	0.08	0.01	0.09	0.09	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_16_230211	ES2305027	<0.01	0.08	0.02	0.10	0.10	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_17_230211	ES2305027	<0.01	0.10	0.02	0.12	0.12	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_18_230211	ES2305027	<0.01	0.08	0.02	0.10	0.10	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_19_230211	ES2305027	<0.01	0.10	0.02	0.12	0.12	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_20_230211	ES2305027	<0.01	0.12	0.02	0.14	0.14	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_21_230211	ES2305027	<0.01	0.11	0.02	0.13	0.13	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_22_230211	ES2305027	<0.01	0.10	0.02	0.12	0.12	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_23_230211	ES2305027	<0.01	0.11	0.02	0.13	0.13	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	12 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_24_230212	ES2305027	<0.01	0.12	0.03	0.15	0.15	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	22 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_01_230222	ES2306591	<0.01	0.11	0.02	0.13	0.13	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	22 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_02_230222	ES2306591	<0.01	0.10	0.02	0.12	0.12	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	22 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_03_230222	ES2306591	<0.01	0.10	0.02	0.12	0.12	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	22 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_04_230222	ES2306591	<0.01	0.09	0.02	0.11	0.11	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	22 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_05_230222	ES2306591	<0.01	0.10	0.02	0.12	0.12	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	22 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_06_230222	ES2306591	<0.01	0.10	0.02	0.12	0.12	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	22 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_07_230222	ES2306591	<0.01	0.07	0.01	0.08	0.08	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	22 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_08_230222	ES2306591	<0.01	0.04	<0.01	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	22 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_09_230222	ES2306591	<0.01	0.04	<0.01	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_10_230223	ES2306591	<0.01	0.06	<0.01	0.06	0.06	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_11_230223	ES2306591	<0.01	0.05	<0.01	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_12_230223	ES2306591	<0.01	0.04	<0.01	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_13_230223	ES2306591	<0.01	0.03	<0.01	0.03	0.03	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_14_230223	ES2306591	<0.01	0.01	<0.01	0.01	0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_15_230223	ES2306591	<0.01	0.03	<0.01	0.03	0.03	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_16_230223	ES2306591	<0.01	0.04	<0.01	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_17_230223	ES2306591	<0.01	0.05	0.01	0.06	0.06	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_18_230223	ES2306591	<0.01	0.05	<0.01	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_19_230223	ES2306591	<0.01	0.04	<0.01	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_20_230223	ES2306591	<0.01	0.06	<0.01	0.06	0.06	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_21_230223	ES2306591	<0.01	0.06	0.01	0.07	0.07	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_22_230223	ES2306591	<0.01	0.06	0.01	0.07	0.07	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_23_230223	ES2306591	<0.01	0.05	<0.01	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_24_230223	ES2306591	<0.01	0.07	0.01	0.08	0.08	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	24 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_230224	ES2306591	<0.01	0.09	0.01	0.10	0.10	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	28 Feb 2023	NT_0990_PFASOMP_23	0990_SW016_230228	ES2307099	<0.01	0.07	0.02	0.09	0.09	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	28 Feb 2023	NT_0990_PFASOMP_23	0990_SW016_230228	ES2307099	<0.01	0.07	0.02	0.09	0.09	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	02 Mar 2023	NT_0990_PFASMGMT_23	0990_SW016_230302	ES2307254	<0.01	0.12	0.04	0.16	0.16	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	02 Mar 2023	NT_0990_PFASMGMT_23	0990_SW016_230302	ES2307254	<0.01	0.07	0.04	0.11	0.11	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Apr 2023	NT_0990_PFASMGMT_23	0990_SW016_01_230411	ES2313050	<0.01	0.37	0.17	0.54	0.57	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Apr 2023	NT_0990_PFASMGMT_23	0990_SW016_02_230411	ES2313050	0.01	0.42	0.18	0.60	0.66	-	<0.02	0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Apr 2023	NT_0990_PFASMGMT_23	0990_SW016_03_230411	ES2313050	<0.01	0.38	0.16	0.54	0.57	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Apr 2023	NT_0990_PFASMGMT_23	0990_SW016_04_230411	ES2313050	<0.01	0.40	0.17	0.57	0.60	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Apr 2023	NT_0990_PFASMGMT_23	0990_SW016_05_230411	ES2313050	<0.01	0.38	0.17	0.55	0.58	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	12 Apr 2023	NT_0990_PFASMGMT_23	0990_SW016_06_230412	ES2313050	<0.01	0.34	0.16	0.50	0.53	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	12 Apr 2023	NT_0990_PFASMGMT_23	0990_SW016_07_230412	ES2313050	<0.01	0.36	0.18	0.54	0.57	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	12 Apr 2023	NT_0990_PFASMGMT_23	0990_SW016_08_230412	ES2313050	0.01	0.37	0.16	0.53	0.57	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	12 Apr 2023	NT_0990_PFASMGMT_23	0990_SW016_09_230412	ES2313050	<0.01	0.38	0.16	0.54	0.61	-	<0.02	0.02	<0.02	<0.02	-	<0.1	0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Aug 2023	NT_0990_PFASMGMT_23	0990_SW016_0.0_221111	ES2329043	<0.01	0.38	0.04	0.42	0.42	-	<0.02

Table T4
Current and Historical Surface Water Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T4 - Current and Historical Surface Water Analytical Results

					PFAS					PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids											PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluoroheadecanoic acid (PFHxDA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.001	0.0001	0.001	0.001	0.002	0.01	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.001	0.001	0.002	0.005	0.002	0.005	0.005	0.002	0.005
Human Receptors																																				
PFAS in Drinking Water (ADWG 2025)					0.2	0.008	0.03				1																									
PFAS NEMP 2025 Recreational water quality guideline					10	2	2	2																												
Ecological Receptors																																				
PFAS NEMP 2025 Freshwater 99%					19	0.00023																														
SW016	05 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_03_240119	ES2403524	<0.01	**0.11**	**0.02**	**0.13**	**0.13**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	05 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_04_240119	ES2403524	<0.01	**0.10**	**0.02**	**0.12**	**0.12**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	05 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_05_240119	ES2403524	<0.01	**0.10**	**0.02**	**0.12**	**0.12**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	05 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_06_240119	ES2403524	<0.01	**0.10**	**0.02**	**0.12**	**0.12**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	05 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_07_240119	ES2403524	<0.01	**0.09**	**0.03**	**0.12**	**0.12**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	05 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_08_240119	ES2403524	<0.01	**0.10**	**0.02**	**0.12**	**0.12**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	05 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_09_240119	ES2403524	<0.01	**0.08**	**0.02**	**0.10**	**0.10**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	05 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_10_240120	ES2403524	<0.01	**0.06**	**0.01**	**0.07**	**0.07**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	09 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_01_240209	ES2404747	**0.02**	**0.39**	**0.30**	**0.69**	**0.83**	-	**0.03**	**0.03**	<0.02	<0.02	-	<0.1	**0.02**	**0.04**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	09 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_02_240209	ES2404747	**0.02**	**0.40**	**0.29**	**0.69**	**0.84**	-	**0.03**	**0.03**	<0.02	<0.02	-	<0.1	**0.03**	**0.04**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	09 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_03_240210	ES2404747	**0.02**	**0.39**	**0.27**	**0.66**	**0.81**	-	**0.03**	**0.03**	<0.02	<0.02	-	<0.1	**0.03**	**0.04**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	09 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_04_240210	ES2404747	**0.02**	**0.36**	**0.30**	**0.66**	**0.81**	-	**0.03**	**0.03**	<0.02	<0.02	-	<0.1	**0.03**	**0.04**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	10 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_05_240210	ES2404747	**0.01**	**0.40**	**0.22**	**0.62**	**0.71**	-	<0.02	**0.02**	<0.02	<0.02	-	<0.1	**0.03**	**0.03**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	10 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_06_240210	ES2404747	<0.01	**0.24**	**0.09**	**0.33**	**0.33**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	10 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_07_240210	ES2404747	<0.01	**0.16**	**0.06**	**0.22**	**0.22**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	10 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_08_240210	ES2404747	<0.01	**0.18**	**0.08**	**0.26**	**0.26**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	10 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_09_240210	ES2404747	<0.01	**0.20**	**0.10**	**0.30**	**0.30**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	10 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_10_240210	ES2404747	<0.01	**0.23**	**0.10**	**0.33**	**0.35**	-	**0.02**	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	10 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_12_240210	ES2404747	<0.01	**0.23**	**0.11**	**0.34**	**0.36**	-	**0.02**	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	10 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_14_240210	ES2404747	<0.01	**0.27**	**0.13**	**0.40**	**0.45**	-	**0.03**	<0.02	<0.02	<0.02	-	<0.1	<0.02	**0.02**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	10 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_16_240210	ES2404747	<0.01	**0.23**	**0.12**	**0.35**	**0.40**	-	**0.03**	<0.02	<0.02	<0.02	-	<0.1	<0.02	**0.02**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	10 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_18_240211	ES2404747	<0.01	**0.26**	**0.13**	**0.39**	**0.46**	-	**0.03**	**0.02**	<0.02	<0.02	-	<0.1	<0.02	**0.02**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_20_240211	ES2404747	<0.01	**0.26**	**0.12**	**0.38**	**0.43**	-	**0.03**	<0.02	<0.02	<0.02	-	<0.1	<0.02	**0.02**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_21_240211	ES2404747	<0.01	**0.28**	**0.14**	**0.42**	**0.47**	-	**0.03**	<0.02	<0.02	<0.02	-	<0.1	<0.02	**0.02**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	12 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_240212	ES2404741	<0.01	**0.12**	**0.04**	**0.16**	**0.16**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	12 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_240212	ES2404747	<0.01	**0.07**	**0.03**	**0.10**	**0.10**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	12 Mar 2024	NT_0990_PFASMGMT_24	0990_SW016_11_240313	ES2408295	<0.01	**0.09**	**0.06**	**0.15**	**0.15**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	12 Mar 2024	NT_0990_PFASOMP_24	0990_SW016_240312	ES2408294	<0.01	**0.12**	**0.07**	**0.19**	**0.19**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	13 Mar 2024	NT_0990_PFASMGMT_24	0990_SW016_01_240313	ES2408295	<0.01	**0.12**	**0.06**	**0.18**	**0.20**	-	**0.02**	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	13 Mar 2024	NT_0990_PFASMGMT_24	0990_SW016_03_240313	ES2408295	<0.01	**0.09**	**0.06**	**0.15**	**0.15**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	13 Mar 2024	NT_0990_PFASMGMT_24	0990_SW016_05_240313	ES2408295	<0.01	**0.10**	**0.06**	**0.16**	**0.16**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	13 Mar 2024	NT_0990_PFASMGMT_24	0990_SW016_08_240313	ES2408295	<0.01	**0.09**	**0.06**	**0.15**	**0.15**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	13 Mar 2024	NT_0990_PFASMGMT_24	0990_SW016_10_240313	ES2408295	<0.01	**0.10**	**0.07**	**0.17**	**0.17**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	13 Mar 2024	NT_0990_PFASMGMT_24	0990_SW016_13_240314	ES2408295	<0.01	**0.08**	**0.06**	**0.14**	**0.14**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	13 Mar 2024	NT_0990_PFASMGMT_24	0990_SW016_15_240313	ES2408295	<0.01	**0.10**	**0.05**	**0.15**	**0.15**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	13 Mar 2024	NT_0990_PFASMGMT_24	0990_SW016_17_240313	ES2408295	<0.01	**0.08**	**0.04**	**0.12**	**0.12**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	13 Mar 2024	NT_0990_PFASMGMT_24	0990_SW016_20_240313	ES2408295	<0.01	**0.07**	**0.04**	**0.11**	**0.11**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	15 Mar 2024	NT_0990_PFASMGMT_24	SW016_01_240315	ES2408743	<0.01	**0.19**	**0.14**	**0.33**	**0.44**	-	**0.04**	**0.03**	<0.02	<0.02	-	<0.1	<0.02	**0.04**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	20 Nov 2024	NT_0990_PFASMGMT_24	0990_SW016_15_241120	ES2437917	**0.02**	**0.42**	**0.17**	**0.59**	**0.72**	<0.02	**0.03**	**0.02**	<0.02	<0.02	-	<0.1	<0.02	**0.06**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	20 Nov 2024	NT_0990_PFASMGMT_24	0990_SW016_16_241120	ES2437917	**0.02**	**0.46**	**0.16**	**0.62**	**0.75**	<0.02	**0.03**	**0.02**	<0.02	<0.02	-	<0.1	<0.02	**0.06**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	20 Nov 2024	NT_0990_PFASMGMT_24	0990_SW016_17_241120	ES2437917	<0.01	**0.43**	**0.09**	**0.52**	**0.54**	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	**0.02**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	20 Nov 2024	NT_0990_PFASMGMT_24	0990_SW016_18_241120	ES2437917	<0.01	**0.42**	**0.08**	**0.50**	**0.50**	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	20 Nov 2024	NT_0990_PFASMGMT_24	0990_SW016_19_241120	ES2437917	<0.01	**0.44**	**0.08**	**0.52**	**0.52**	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	20 Nov 2024	NT_0990_PFASMGMT_24	0990_SW016_20_241120	ES2437917	<0.01	**0.45**	**0.08**	**0.53**	**0.53**	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	20 Nov 2024	NT_0990_PFASMGMT_24	0990_SW016_21_241120	ES2437917	<0.01	**0.47**	**0.08**	**0.55**	**0.55**	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	20 Nov 2024	NT_0990_PFASMGMT_24	0990_SW016_22_241120	ES2437917	<0.01	**0.44**	**0.09**	**0.53**	**0.53**	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	20 Nov 2024	NT_0990_PFASMGMT_24	0990_SW016_23_241120	ES2437917	<0.01	**0.42**	**0.10**	**0.52**	**0.54**	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	**0.02**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	20 Nov 2024	NT_0990_PFASMGMT_24	0990_SW016_24_241120	ES2437917	<0.01	**0.48**	**0.09**	**0.57**	**0.57**	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_1_241203	ES2439950	<0.01	**0.39**	**0.07**	**0.46**	**0.46**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_2_241203	ES2439950	<0.01	**0.47**	**0.06**	**0.53**	**0.53**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_3_241203	ES2439950	<0.01	**0.37**	**0.03**	**0.40**	**0.40**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_4_241203	ES2439950	<0.01	**0.30**	**0.03**	**0.33**	**0.33**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_5_241203	ES2439950	<0.01	**0.31**	**0.03**	**0.34**	**0.34**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_6_241203	ES2439950	<0.01	**0.33**	**0.03**	**0.36**	**0.36**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_7_241203	ES2439950	<0.01	**0.32**	**0.03**	**0.35**	**0.35**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_8_241203	ES2439950	<0.01	**0.35**	**0.03**	**0.38**	**0.38**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_9_241203	ES2439950	<0.01	**0.36**	**0.04**	**0.40**	**0.40**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_10_241203	ES2439950	<0.01	**0.37**	**0.04**	**0.41**	**0.41**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_12_241203	ES2439950	<0.01	**0.34**	**0.05**	**0.39**	**0.39**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_14_241203

Table T4
Current and Historical Surface Water Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T4 - Current and Historical Surface Water Analytical Results

					PFAS					PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids											PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluoroheadecanoic acid (PFHxDA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.001	0.0001	0.001	0.001	0.002	0.01	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.001	0.001	0.002	0.005	0.002	0.005	0.005	0.002	0.005
Human Receptors																																				
PFAS in Drinking Water (ADWG 2025)					0.2	0.008	0.03				1																									
PFAS NEMP 2025 Recreational water quality guideline					10	2	2	2																												
Ecological Receptors																																				
PFAS NEMP 2025 Freshwater 99%					19	0.00023																														
SW100	12 Oct 2017	NT_0990_PFAS	0990_SW101_171012	567867	<0.01	**0.16**	**0.08**	**0.24**	**0.27**	-	**0.01**	**0.01**	<0.01	<0.01	-	<0.05	<0.01	**0.01**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW100	15 Dec 2017	NT_0990_PFAS	0990_SW100_171215	578312	<0.01	**0.01**	<0.01	**0.01**	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW100	07 Feb 2018	NT_0990_PFAS	0990_SW100_180207	584157	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW100	20 Mar 2018	NT_0990_PFAS	0990_SW100_180320	590602	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW100	01 May 2018	NT_0990_PFAS	0990_SW100_180501	597082	<0.01	**0.06**	**0.03**	**0.09**	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW100	14 Sep 2018	NT_0990_PFAS	0990_SW100_180914	618146	<0.01	**0.13**	**0.11**	**0.24**	**0.29**	-	**0.01**	**0.02**	<0.01	<0.01	-	<0.05	<0.01	**0.02**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW100	12 Dec 2018	NT_0990_PFAS	0990_SW100_181212	633267	<0.01	**0.05**	**0.03**	**0.08**	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW100	27 Mar 2019	NT_0990_PFAS	0990_SW100_190327	648349	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW100	30 Oct 2019	NT_0990_PFASOMP	0990_SW100_191030	ES1936083	<0.01	**0.16**	**0.15**	**0.31**	**0.33**	-	**0.02**	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW100	24 Apr 2020	NT_0990_PFASOMP	0990_SW100_200424	ES2014275	<0.01	**0.04**	**0.03**	**0.07**	**0.07**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW100	16 Nov 2020	NT_0990_PFASOMP	0990_SW100_201116	ES2041113	<0.01	**0.16**	**0.16**	**0.32**	**0.36**	-	<0.02	**0.02**	<0.02	<0.02	-	<0.1	<0.02	**0.02**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW100	16 Dec 2020	NT_0990_PFASOMP	0990_SW100_201216	ES2044940	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW100	22 Apr 2021	NT_0990_PFASOMP	0990_SW100_210422	ES2115517	<0.01	**0.02**	<0.02	**0.02**	**0.02**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW100	20 Dec 2021	NT_0990_PFASOMP	0990_SW100_211220	ES2146720	<0.01	**0.06**	**0.04**	**0.10**	**0.10**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW100	16 Mar 2022	NT_0990_PFASOMP	0990_SW100_220316	ES2209387	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW100	24 Oct 2022	NT_0990_PFASOMP	0990_SW100_221024	ES2238126	<0.01	**0.11**	**0.08**	**0.19**	**0.19**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW100	29 Mar 2023	NT_0990_PFASOMP_23	0990_SW100_230329	ES2311363	<0.01	**0.01**	<0.01	**0.01**	**0.01**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW100	18 Sep 2023	NT_0990_PFASOMP_23	0990_SW100_230918	ES2332783	<0.01	**0.14**	**0.10**	**0.24**	**0.26**	-	<0.02	**0.02**	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW100	12 Mar 2024	NT_0990_PFASOMP_24	0990_SW100_240312	ES2408294	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW100	30 Oct 2024	NT_0990_PFASOMP_24	0990_SW100_241030	ES2435723	<0.01	**0.16**	**0.11**	**0.27**	**0.27**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW100	19 Mar 2025	NT_0990_PFASOMP_25	0990_SW100_250319	ES2508367	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	09 Aug 2017	NT_0990_PFAS	0990_SW108_170809	561059	<0.01	**0.07**	**0.04**	**0.11**	**0.11**	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	30 Aug 2017	NT_0990_PFAS	0990_SW108_170830	561811	<0.01	**0.09**	**0.07**	**0.16**	**0.16**	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	26 Sep 2017	NT_0990_PFAS	0990_SW173_170926	566728	<0.01	**0.14**	**0.12**	**0.26**	**0.29**	-	**0.01**	**0.01**	<0.01	<0.01	-	<0.05	<0.01	**0.01**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	12 Oct 2017	NT_0990_PFAS	0990_SW108_171012	567867	<0.01	**0.13**	**0.07**	**0.2**	**0.22**	-	**0.01**	**0.01**	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	15 Dec 2017	NT_0990_PFAS	0990_SW108_171215	578312	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	06 Feb 2018	NT_0990_PFAS	0990_SW108_180206	584157	<0.01	**0.02**	**0.02**	**0.04**	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	20 Mar 2018	NT_0990_PFAS	0990_SW108_180320	590602	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	01 May 2018	NT_0990_PFAS	0990_SW108_180501	597082	<0.01	**0.03**	**0.02**	**0.05**	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	07 Aug 2018	NT_0990_PFAS	0990_SW108_180807	611483	<0.01	**0.11**	**0.05**	**0.16**	**0.16**	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	16 Aug 2018	NT_0990_PFAS	0990_SW108_180816	613201	<0.01	**0.08**	**0.05**	**0.13**	**0.13**	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	14 Sep 2018	NT_0990_PFAS	0990_SW108_180914	618146	<0.01	**0.12**	**0.10**	**0.22**	**0.27**	-	**0.01**	**0.02**	<0.01	<0.01	-	<0.05	<0.01	**0.02**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	11 Oct 2018	NT_0990_PFAS	0990_SW108_181011	622536	<0.01	**0.13**	**0.09**	**0.22**	**0.26**	-	**0.01**	**0.02**	<0.01	<0.01	-	<0.05	<0.01	**0.01**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	12 Dec 2018	NT_0990_PFAS	0990_SW108_181212	633267	<0.01	**0.03**	**0.02**	**0.05**	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	28 Feb 2019	NT_0990_PFAS	0990_SW108_190228	644424	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	27 Mar 2019	NT_0990_PFAS	0990_SW108_190327	648349	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	12 Jun 2019	NT_0990_PFAS	0990_SW108_190612	661334	<0.01	**0.08**	**0.06**	**0.14**	**0.14**	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	31 Oct 2019	NT_0990_PFASOMP	0990_SW108_191031	ES1936083	<0.01	**0.14**	**0.13**	**0.27**	**0.31**	-	**0.02**	**0.02**	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	18 Nov 2019	NT_0990_PFASOMP	0990_SW108_191118	ES1938861	<0.01	**0.25**	**0.17**	**0.42**	**0.50**	-	**0.03**	**0.03**	<0.02	<0.02	-	<0.1	<0.02	**0.02**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	18 Feb 2020	NT_0990_PFASOMP	0990_SW108_200217	ES2005777	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	24 Apr 2020	NT_0990_PFASOMP	0990_SW108_200424	ES2014275	<0.01	**0.02**	**0.02**	**0.04**	**0.04**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	22 Jul 2020	NT_0990_PFASOMP	0990_SW108_200720	ES2025129	<0.01	**0.14**	**0.10**	**0.24**	**0.24**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	16 Nov 2020	NT_0990_PFASOMP	0990_SW108_201116	ES2041113	<0.01	**0.09**	**0.09**	**0.18**	**0.18**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	01 Feb 2021	NT_0990_PFASOMP	0990_SW108_210201	ES2103448	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	22 Apr 2021	NT_0990_PFASOMP	0990_SW108_210422	ES2115517	<0.01	**0.02**	<0.02	**0.02**	**0.02**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	02 Jun 2021	NT_0990_PFASOMP	0990_SW108_210602	ES2121388	<0.01	**0.06**	**0.05**	**0.11**	**0.11**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	06 Jul 2021	NT_0990_PFASOMP	0990_SW108_210606	ES2124685	<0.01	**0.06**	**0.04**	**0.10**	**0.10**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	10 Oct 2021	NT_0990_PFASOMP	0990_SW108_211010	ES2136974	<0.01	**0.14**	**0.11**	**0.25**	**0.25**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	21 Dec 2021	NT_0990_PFASOMP	0990_SW108_211220	ES2146863	<0.01	**0.02**	**0.01**	**0.03**	**0.03**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	16 Mar 2022	NT_0990_PFASOMP	0990_SW108_220315	ES2209387	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	14 Jun 2022	NT_0990_PFASOMP	0990_SW108_220614	ES2221046	<0.01	**0.12**	**0.08**	**0.20**	**0.20**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	24 Oct 2022	NT_0990_PFASOMP	0990_SW108_221024	ES2238127	<0.01	**0.12**	**0.09**	**0.21**	**0.21**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	18 Jan 2023	NT_0990_PFASOMP_23	0990_SW108_230118	ES2301808	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	03 Apr 2023	NT_0990_PFASOMP_23	0990_SW108_230403	ES2311363	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	24 Jul 2023	NT_0990_PFASOMP_23	0990_SW108_230724	ES2325102	<0.01	**0.10**	**0.06**	**0.16**	**0.16**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	18 Sep 2023	NT_0990_PFASOMP_23	0990_SW108_230918	ES2332783	<0.01	**0.14**	**0.09**	**0.23**	**0.25**	-	<0.02	**0.02**	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	16 Jan 2024	NT_0990_PFASOMP_24	0990_SW108_240116	ES2401443	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	10 Apr 2024	NT_0990_PFASOMP_24	0990_SW108_240410	ES2412006	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	19 Jun 2024	NT_0990_PFASOMP_24	0990_SW108_240619	ES2420210	<0.01	**0.04**	**0.03**	**0.07**	**0.07**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	30 Oct 2024	NT_0990_PFASOMP_24	0990_SW108_241030	ES2435723	<0.01	**0.12**	**0.09**	**0.21**	**0.21**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	13 Jan 2025	NT_0990_PFASOMP_25	0990_SW108_250113	ES2501556	<0.01	**0.02**	<0.01	**0.02**	**0.02**	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02

Table T4
Current and Historical Surface Water Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T4 - Current and Historical Surface Water Analytical Results

				PFAS					PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids												PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
				Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluoroheadecanoic acid (PFHxDA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR				0.001	0.0001	0.001	0.001	0.002	0.01	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.001	0.001	0.002	0.005	0.002	0.005	0.005	0.002	0.005
Human Receptors																																				
PFAS in Drinking Water (ADWG 2025)				0.2	0.008	0.03				1																										
PFAS NEMP 2025 Recreational water quality guideline				10	2	2	2																													
Ecological Receptors																																				
PFAS NEMP 2025 Freshwater 99%				19	0.00023																															
SW151	28 Oct 2022	NT_0990_PFASOMP	0990_SW151_221028	ES2240261	<0.01	0.13	0.07	0.20	0.20	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW151	24 Oct 2023	NT_0990_PFASOMP_23	0990_SW151_231024	ES2337465	<0.01	0.10	0.10	0.20	0.20	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW151	16 Oct 2024	NT_0990_PFASOMP_24	0990_SW151_241016	ES2434947	<0.01	0.09	0.08	0.17	0.17	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	02 Aug 2017	NT_0990_PFAS	0990_SW153_170802	558305	<0.01	0.04	0.01	0.05	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	28 Sep 2017	NT_0990_PFAS	0990_SW153_170928	565652	<0.01	0.03	0.01	0.04	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	08 Nov 2017	NT_0990_PFAS	0990_SW153_171108	572262	<0.01	0.02	0.01	0.03	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	16 Dec 2017	NT_0990_PFAS	0990_SW153_171216	578312	<0.01	0.02	0.01	0.03	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	07 Feb 2018	NT_0990_PFAS	0990_SW153_180207	584157	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	12 Mar 2018	NT_0990_PFAS	0990_SW153_180312	589482	<0.01	0.02	0.01	0.03	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	04 Apr 2018	NT_0990_PFAS	0990_SW153_180404	592957	<0.01	0.04	0.01	0.05	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	23 Apr 2018	NT_0990_PFAS	0990_SW153_180423	596114	<0.01	0.03	0.02	0.05	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	01 May 2018	NT_0990_PFAS	0990_SW153_180501	597082	<0.01	0.03	0.01	0.04	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	22 Jun 2018	NT_0990_PFAS	0990_SW153_180622	604666	<0.01	0.02	0.01	0.03	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	17 Jul 2018	NT_0990_PFAS	0990_SW153_180717	608539	<0.01	0.02	0.01	0.03	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	07 Aug 2018	NT_0990_PFAS	0990_SW153_180807	611483	<0.01	0.02	0.01	0.03	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	16 Aug 2018	NT_0990_PFAS	0990_SW153_180816	613201	<0.01	0.02	0.01	0.03	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	14 Sep 2018	NT_0990_PFAS	0990_SW153_180914	618146	<0.01	0.02	0.02	0.04	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	25 Sep 2018	NT_0990_PFAS	0090_SW153_180925	620163	<0.01	0.02	0.02	0.04	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	11 Oct 2018	NT_0990_PFAS	0990_SW153_181011	622536	<0.01	0.02	0.01	0.03	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	12 Dec 2018	NT_0990_PFAS	0990_SW153_181212	633267	<0.01	0.02	0.01	0.03	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	28 Feb 2019	NT_0990_PFAS	0990_SW153_190228	644424	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	27 Mar 2019	NT_0990_PFAS	0990_SW153_190327	648349	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	12 Jun 2019	NT_0990_PFAS	0990_SW153_190612	661334	<0.01	0.01	0.01	0.02	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	31 Oct 2019	NT_0990_PFASOMP	0990_SW153_191031	ES1936083	<0.01	0.01	<0.02	0.01	0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	18 Feb 2020	NT_0990_PFASOMP	0990_SW153_200218	ES2005777	<0.01	0.01	<0.02	0.01	0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	24 Apr 2020	NT_0990_PFASOMP	0990_SW153_200424	ES2014275	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	22 Jul 2020	NT_0990_PFASOMP	0990_SW153_200721	ES2025129	<0.01	0.01	<0.02	0.01	0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	16 Nov 2020	NT_0990_PFASOMP	0990_SW153_201116.	ES2041113	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	01 Feb 2021	NT_0990_PFASOMP	0990_SW153_210201	ES2103448	<0.01	0.02	<0.02	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	23 Apr 2021	NT_0990_PFASOMP	0990_SW153_210423	ES2115517	<0.01	0.03	<0.02	0.03	0.03	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	06 Jul 2021	NT_0990_PFASOMP	0990_SW153_210606	ES2124685	<0.01	0.02	<0.02	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	10 Oct 2021	NT_0990_PFASOMP	0990_SW153_211010	ES2136974	<0.01	0.01	<0.02	0.01	0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	20 Dec 2021	NT_0990_PFASOMP	0990_SW153_211220	ES2146863	<0.01	0.01	0.01	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	16 Mar 2022	NT_0990_PFASOMP	0990_SW153_220316	ES2209382	<0.01	0.02	0.01	0.03	0.03	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	14 Jun 2022	NT_0990_PFASOMP	0990_SW153_220614	ES2221046	<0.01	0.02	0.01	0.03	0.03	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	24 Oct 2022	NT_0990_PFASOMP	0990_SW153_221024	ES2238127	<0.01	0.02	0.01	0.03	0.03	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	17 Jan 2023	NT_0990_PFASOMP_23	0990_SW153_230117	ES2301808	<0.01	0.02	0.01	0.03	0.03	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	03 Apr 2023	NT_0990_PFASOMP_23	0990_SW153_230403	ES2311363	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	24 Jul 2023	NT_0990_PFASOMP_23	0990_SW153_230724	ES2325102	<0.01	0.02	0.01	0.03	0.03	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	18 Sep 2023	NT_0990_PFASOMP_23	0990_SW153_230918	ES2332783	<0.01	0.02	<0.01	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	16 Jan 2024	NT_0990_PFASOMP_24	0990_SW153_240116	ES2401443	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	10 Apr 2024	NT_0990_PFASOMP_24	0990_SW153_240410	ES2412006	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	19 Jun 2024	NT_0990_PFASOMP_24	0990_SW153_240619	ES2420210	<0.01	0.02	0.01	0.03	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	30 Oct 2024	NT_0990_PFASOMP_24	0990_SW153_241030	ES2435723	<0.01	0.02	<0.01	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	13 Jan 2025	NT_0990_PFASOMP_25	0990_SW153_250113	ES2501556	<0.01	<0.01	0.02	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	19 Mar 2025	NT_0990_PFASOMP_25	0990_SW153_250319	ES2508367	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW161	22 Aug 2017	NT_0990_PFAS	0990_SW161_170822	560143	0.002	0.0096	<0.001	0.0096	0.0156	-	<0.001	<0.001	<0.001	<0.001	-	<0.005	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	0.003	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
SW161	11 Sep 2017	NT_0990_PFAS	0990_SW161_170911	562857	<0.001	0.0065	<0.001	<0.01	<0.1	-	<0.001	<0.001	<0.001	<0.001	-	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
SW161	20 Sep 2017	NT_0990_PFAS	0990_SW161_170920	564886	<0.001	0.003	<0.001	0.003	<0.01	-	<0.001	<0.001	<0.001	<0.001	-	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
SW161	20 Sep 2017	NT_0990_PFAS	0990_SW161_170920	564886	<0.001	0.004	<0.001	0.004	<0.01	-	<0.001	<0.001	<0.001	<0.001	-	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
SW161	18 Oct 2017	NT_0990_PFAS	0990_SW161_171018	568582	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW161	15 Dec 2017	NT_0990_PFAS	0990_SW161_171215	578312	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW161	15 Dec 2017	NT_0990_PFAS	0990_SW167_171215	578312	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW161	06 Feb 2018	NT_0990_PFAS	0990_SW161_180206	584157	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW161	06 Feb 2018	NT_0990_PFAS	0990_SW167_180206	584157	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW161	20 Mar 2018	NT_0990_PFAS	0990_SW161_180320	590602	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW161	20 Mar 2018	NT_0990_PFAS	0990_SW167_180320	590602	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW161	01 May 2018	NT_0990_PFAS	0990_SW167_180501	597082	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW161	18 Jan 2019	NT_0990_PFAS	0990_SW167_190118	637112	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW161	31 Oct 2019	NT_0990_PFASOMP	0990_SW161_191031	ES1936083	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW161	20 Apr 2020	NT_0990_PFASOMP	0990_SW161_200420	ES2014275	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW161	17 Nov 2020	NT_0990_PFASOMP	0990_SW161_201117	ES2

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	PFAS					PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids										
	Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluoroheadecanoic acid (PFHxDA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR	0.001	0.0001	0.001	0.001	0.002	0.01	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Human Receptors																					
PFAS in Drinking Water (ADWG 2025)	0.2	0.008	0.03				1														
PFAS NEMP 2025 Recreational water quality guideline	10	2	2	2																	
Ecological Receptors																					
PFAS NEMP 2025 Freshwater 99%	19	0.00023																			
Number of Env Standard Exceedances (Detects Only)	**16**	**507**	**239**	**24**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
% of Detects	**14**	**87**	**78**	**87**	**80**	**14**	**19**	**19**	**11**	**2**	**0**	**3**	**13**	**26**	**9**	**4**	**3**	**3**	**3**	**1**	**1**
% of Non-Detects	**86**	**13**	**22**	**13**	**20**	**86**	**81**	**81**	**89**	**98**	**100**	**97**	**87**	**74**	**91**	**96**	**97**	**97**	**97**	**99**	**99**
% of Detects at or above Env Standards	**3**	**87**	**41**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
% of Results Below Env Standards or Non-Detect	**97**	**13**	**59**	**96**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

	PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl Perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR	0.001	0.005	0.001	0.001	0.002	0.005	0.002	0.005	0.005	0.002	0.005
Human Receptors											
PFAS in Drinking Water (ADWG 2025)											
PFAS NEMP 2025 Recreational water quality guideline											
Ecological Receptors											
PFAS NEMP 2025 Freshwater 99%											
Number of Env Standard Exceedances (Detects Only)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
% of Detects	**0**	**2**	**4**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**
% of Non-Detects	**100**	**98**	**96**	**100**	**98**	**100**	**100**	**100**	**100**	**100**	**100**
% of Detects at or above Env Standards	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
% of Results Below Env Standards or Non-Detect	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Environmental Standards
NHMRC, 25 June 2025, PFAS in Drinking Water (ADWG 2025)
HEPA, March 2025, PFAS NEMP 2025 Freshwater 99%
HEPA, March 2025, PFAS NEMP 2025 Recreational water quality guideline

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					PFAS					PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids											PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexadecanoic acid (PFHxDA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.001	0.0001	0.001	0.001	0.002	0.01	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.001	0.001	0.002	0.005	0.002	0.005	0.005	0.002	0.005
Human Receptors																																			
PFAS in Drinking Water (ADWG 2025)					0.2	0.008	0.03				1																								
PFAS NEMP 2025 Recreational water quality guideline					10	2	2	2																											
Ecological Receptors																																			
PFAS NEMP 2025 Freshwater 99%					19	0.00023																													
Location	Cod Date	Project ID	Field ID	Lab Report Number																															
OTH008	07 Sep 2017	NT_0990_PFAS	0990_PB043_170907	562587	0.01	0.29	0.31	0.6	0.87	-	0.07	0.07	0.02	<0.01	-	<0.05	0.02	0.08	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	28 Sep 2017	NT_0990_PFAS	0990_PB043_170928	565650	0.02	0.42	0.42	0.84	1.17	-	0.07	0.08	0.02	<0.01	-	<0.05	0.03	0.11	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	11 Oct 2017	NT_0990_PFAS	0990_PB043N_171011	567472	0.01	0.36	0.34	0.7	0.97	-	0.07	0.06	0.02	<0.01	-	<0.05	0.02	0.09	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	11 Oct 2017	NT_0990_PFAS	0990_PB043S_171011	567472	0.02	0.34	0.33	0.67	0.96	-	0.07	0.06	0.02	<0.01	-	<0.05	0.03	0.09	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	22 Nov 2017	NT_0990_PFAS	0990_PB043_171122	574367	<0.01	0.09	0.10	0.19	0.27	-	0.02	0.03	<0.01	<0.01	-	<0.05	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	21 Dec 2017	NT_0990_PFAS	0990_PB043_171221	580452	<0.01	0.05	0.06	0.11	0.15	-	0.01	0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	15 Jan 2018	NT_0990_PFAS	0990_PB043_180115	581310	<0.01	0.05	0.06	0.11	0.16	-	0.01	0.02	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	30 Jan 2018	NT_0990_PFAS	0990_PB043_180130	583207	<0.01	0.04	0.05	0.09	0.12	-	0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	12 Feb 2018	NT_0990_PFAS	0990_PB043_180212	585138	<0.01	0.03	0.05	0.08	0.11	-	0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	26 Feb 2018	NT_0990_PFAS	0990_PB043_180226	587068	<0.01	0.03	0.04	0.07	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	12 Mar 2018	NT_0990_PFAS	0990_PB043_180312	589482	<0.01	0.03	0.04	0.07	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	04 Apr 2018	NT_0990_PFAS	0990_PB043_180404	592957	<0.01	0.04	0.04	0.08	0.12	-	0.01	0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	23 Apr 2018	NT_0990_PFAS	0990_PB043_180423	596114	<0.01	0.04	0.04	0.08	0.11	-	0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	04 May 2018	NT_0990_PFAS	0990_PB043_180504	598570	<0.01	0.05	0.06	0.11	0.17	-	0.01	0.01	<0.01	<0.01	-	<0.05	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	20 Jun 2018	NT_0990_PFAS	0990_PB043_180620	604664	<0.01	0.05	0.05	0.1	0.14	-	0.01	0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	16 Jul 2018	NT_0990_PFAS	0990_PB043_180716	608539	<0.01	0.05	0.06	0.11	0.15	-	0.01	0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	07 Aug 2018	NT_0990_PFAS	0990_PB043_180807	611483	<0.01	0.06	0.06	0.12	0.17	-	0.01	0.01	<0.01	<0.01	-	<0.05	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	16 Aug 2018	NT_0990_PFAS	0990_PB043_180816	613201	<0.01	0.05	0.04	0.09	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	13 Sep 2018	NT_0990_PFAS	0990_PB043_180913	618146	<0.01	0.05	0.06	0.11	0.15	-	0.01	0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	25 Sep 2018	NT_0990_PFAS	0090_PB043_180925	620163	<0.01	0.06	0.07	0.13	0.18	-	0.01	0.02	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	11 Oct 2018	NT_0990_PFAS	0990_PB043_181011	622536	<0.01	0.04	0.05	0.09	0.12	-	0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	12 Dec 2018	NT_0990_PFAS	0990_PB043_181212	633267	<0.01	0.05	0.05	0.1	0.15	-	0.01	0.01	<0.01	<0.01	-	<0.05	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	28 Feb 2019	NT_0990_PFAS	0990_PB043_190228	644424	<0.01	0.01	0.03	0.04	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	27 Mar 2019	NT_0990_PFAS	0990_PB043_190327	648349	<0.01	0.02	0.03	0.05	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	12 Jun 2019	NT_0990_PFAS	0990_PB043_190612	661334	<0.01	0.03	0.04	0.07	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OTH008	31 Oct 2019	NT_0990_PFASOMP	0990_OTH008_191031	ES1936083	<0.01	0.04	0.06	0.10	0.13	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
OTH008	18 Feb 2020	NT_0990_PFASOMP	0990_OTH008_200217	ES2005777	<0.01	0.04	0.05	0.09	0.11	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
OTH008	27 May 2020	NT_0990_PFASOMP	0990_OTH008_200527	ES2018815	<0.01	0.03	0.05	0.08	0.11	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
OTH008	22 Jul 2020	NT_0990_PFASOMP	0990_OTH008_200720	ES2025129	<0.01	0.02	0.04	0.06	0.09	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
OTH008	16 Nov 2020	NT_0990_PFASOMP	0990_OTH008_201116	ES2041113	<0.01	0.02	0.05	0.07	0.09	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
OTH008	02 Feb 2021	NT_0990_PFASOMP	0990_OTH008_210202	ES2103448	<0.01	0.02	0.03	0.05	0.07	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
OTH008	21 Apr 2021	NT_0990_PFASOMP	0990_OTH008_210421	ES2115517	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
OTH008	06 Jul 2021	NT_0990_PFASOMP	0990_OTH008_210606	ES2124685	<0.01	0.10	0.10	0.20	0.25	-	0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
OTH008	10 Oct 2021	NT_0990_PFASOMP	0990_OTH008_211010	ES2136974	<0.01	0.06	0.08	0.14	0.17	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
OTH008	20 Dec 2021	NT_0990_PFASOMP	0990_OTH008_211220	ES2146863	<0.01	0.05	0.06	0.11	0.14	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
OTH008	16 Mar 2022	NT_0990_PFASOMP	0990_OTH008_220316	ES2209382	<0.01	0.05	0.05	0.10	0.13	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
OTH008	14 Jun 2022	NT_0990_PFASOMP	0990_OTH008_220614	ES2221046	<0.01	0.10	0.07	0.17	0.20	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
OTH008	24 Oct 2022	NT_0990_PFASOMP	0990_OTH008_221024	ES2238127	<0.01	0.04	0.06	0.10	0.13	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
OTH008	17 Jan 2023	NT_0990_PFASOMP_23	0990_OTH008_230117	ES2301808	<0.01	0.02	0.03	0.05	0.07	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
OTH008	03 Apr 2023	NT_0990_PFASOMP_23	0990_OTH008_230403	ES2311363	<0.01	0.02	0.03	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
OTH008	24 Jul 2023	NT_0990_PFASOMP_23	0990_OTH008_230724	ES2325102	<0.01	0.04	0.03	0.07	0.07	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
OTH008	18 Sep 2023	NT_0990_PFASOMP_23	0990_OTH008_230918	ES2332783	<0.01	0.03	0.04	0.07	0.07	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
OTH008	16 Jan 2024	NT_0990_PFASOMP_24	0990_OTH008_240116	ES2401443	<0.01	0.03	0.03	0.06	0.06	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
SW016	01 May 2017	NT_0990_PFAS	0990_SW16_17/05/01	544592	0.03	0.92	0.44	-	-	-	0.07	0.06	0.04	<0.01	-	<0.05	0.03	0.11	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW016	20 Jan 2018	NT_0990_PFAS	0990_SW121_180120	581624	0.02	0.80	0.23	1.03	1.29	-	0.05	0.05	0.02	<0.01	-	<0.05	0.03	0.08	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW016	16 Feb 2018	NT_0990_PFAS	0990_SW016_180216	585791	0.02	0.61	0.22	0.83	1.05	-	0.04	0.03	0.02	<0.01	-	<0.05	0.03	0.07	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW016	23 Feb 2018	NT_0990_PFAS	0990_SW016_180223	587068	0.04	1.2	0.53	1.73	2.14	-	0.08	0.08	0.04	<0.01	-	<0.05	0.03	0.12	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW016	02 Mar 2018	NT_0990_PFAS	0990_SW016_180302	587931	0.05	1.0	0.67	1.67	2.14	-	0.08	0.09	0.05	<0.01	-	<0.05	0.04	0.14	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW016	09 Mar 2018	NT_0990_PFAS	0990_SW016_180309	589220	0.03	1.3	0.51	1.81	2.2	-	0.07	0.08	0.04	<0.01	-	<0.05	0.03	0.12	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW016	04 Apr 2018	NT_0990_PFAS	0990_SW016_180404	592957	0.03	1.2	0.44	1.64	2.01	-	0.06	0.09	0.03	<0.01	-	<0.05	0.03	0.11	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW016	12 Dec 2018	NT_0990_PFAS	0990_SW016_181212	633267	0.02	0.78	0.20	0.98	1.15	-	0.02	0.02	0.01	<0.01	-	<0.05	0.04	0.05	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW016	27 Mar 2019	NT_0990_PFAS	0990_SW016_190327	648349	<0.01	0.33	0.07	0.4	0.44	<0.01	0.01	0.01	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW016	22 Apr 2020	NT_0990_PFASOMP	0990_SW016_200422	ES2014275	<0.01	0.51	0.06	0.57	0.57	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
SW016	16 Dec 2020	NT_0990_PFASOMP	0990_SW016_201216	ES2044940	<0.01	0.37	0.03	0.40	0.40	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
SW016	12 Feb 2021	NT_0990_PFASMGMT	0990_SW016_210212	773966	<0.01	0.21	0.02	0.23	0.23	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
SW016	24 Mar 2021	NT_0990_PFASMGMT	0990_SW016_210324	785172	0.04	0.56	0.52	1.08	1.51	0.04	0.09	0.08	0.02	<0.01	-	<0.05	0.04	0.10	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW016	21 Apr 2021	NT_0990_PFASOMP	0990_SW016_210421	ES2115517	0.03	0.61	0.52	1.13	1.51	-	0.06	0.06	0.03	<0.02	-	<0.1	0.06	0.12	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
SW016	20 Dec 2021	NT_0990_PFASOMP	0990_SW016_211220	ES2146720	0.02	0.42	0.16	0.58	0.76	-	0.05	0.03	<0.02	<0.02	-	<0.1	<0.02	0.08	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
SW016	25 Feb 2022	NT_0990_PFASOMP	0990_SW016_220225	ES2207188	0.02	0.65	0.15	0.80	0.90	-	0.03	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
SW016	15 Mar 2022	NT_0990_PFASOMP	0990_SW016_220315	ES2209680	0.02	0.45	0.16	0.61	0.69	-	<0.02	0.02	<0.02	<0.02	-	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.02	<0.05
SW016	12 Sep 2022	NT_0990_PFASOMP	0990_SW016_220912	ES2232730	0.01	0.43	0.08	0.51	0.57	-	0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.

Table T4
Current and Historical Surface Water Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T4 - Current and Historical Surface Water Analytical Results

					PFAS					PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids											PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexadecanoic acid (PFHxDA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.001	0.0001	0.001	0.001	0.002	0.01	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.001	0.001	0.002	0.005	0.002	0.005	0.005	0.002	0.005
Human Receptors																																				
PFAS in Drinking Water (ADWG 2025)					0.2	0.008	0.03				1																									
PFAS NEMP 2025 Recreational water quality guideline					10	2	2	2																												
Ecological Receptors																																				
PFAS NEMP 2025 Freshwater 99%					19	0.00023																														
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_09_230211	ES2305027	<0.01	0.09	0.02	0.11	0.11	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_10_230211	ES2305027	<0.01	0.10	0.01	0.11	0.11	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_11_230211	ES2305027	<0.01	0.10	0.02	0.12	0.12	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_12_230211	ES2305027	<0.01	0.09	0.02	0.11	0.11	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_13_230211	ES2305027	<0.01	0.09	0.02	0.11	0.11	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_14_230211	ES2305027	<0.01	0.08	0.02	0.10	0.10	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_15_230211	ES2305027	<0.01	0.08	0.01	0.09	0.09	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_16_230211	ES2305027	<0.01	0.08	0.02	0.10	0.10	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_17_230211	ES2305027	<0.01	0.10	0.02	0.12	0.12	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_18_230211	ES2305027	<0.01	0.08	0.02	0.10	0.10	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_19_230211	ES2305027	<0.01	0.10	0.02	0.12	0.12	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_20_230211	ES2305027	<0.01	0.12	0.02	0.14	0.14	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_21_230211	ES2305027	<0.01	0.11	0.02	0.13	0.13	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_22_230211	ES2305027	<0.01	0.10	0.02	0.12	0.12	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_23_230211	ES2305027	<0.01	0.11	0.02	0.13	0.13	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	12 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_24_230212	ES2305027	<0.01	0.12	0.03	0.15	0.15	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	22 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_01_230222	ES2306591	<0.01	0.11	0.02	0.13	0.13	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	22 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_02_230222	ES2306591	<0.01	0.10	0.02	0.12	0.12	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	22 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_03_230222	ES2306591	<0.01	0.10	0.02	0.12	0.12	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	22 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_04_230222	ES2306591	<0.01	0.09	0.02	0.11	0.11	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	22 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_05_230222	ES2306591	<0.01	0.10	0.02	0.12	0.12	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	22 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_06_230222	ES2306591	<0.01	0.10	0.02	0.12	0.12	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	22 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_07_230222	ES2306591	<0.01	0.07	0.01	0.08	0.08	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	22 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_08_230222	ES2306591	<0.01	0.04	<0.01	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	22 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_09_230222	ES2306591	<0.01	0.04	<0.01	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_10_230223	ES2306591	<0.01	0.06	<0.01	0.06	0.06	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_11_230223	ES2306591	<0.01	0.05	<0.01	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_12_230223	ES2306591	<0.01	0.04	<0.01	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_13_230223	ES2306591	<0.01	0.03	<0.01	0.03	0.03	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_14_230223	ES2306591	<0.01	0.01	<0.01	0.01	0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_15_230223	ES2306591	<0.01	0.03	<0.01	0.03	0.03	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_16_230223	ES2306591	<0.01	0.04	<0.01	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_17_230223	ES2306591	<0.01	0.05	0.01	0.06	0.06	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_18_230223	ES2306591	<0.01	0.05	<0.01	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_19_230223	ES2306591	<0.01	0.04	<0.01	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_20_230223	ES2306591	<0.01	0.06	<0.01	0.06	0.06	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_21_230223	ES2306591	<0.01	0.06	0.01	0.07	0.07	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_22_230223	ES2306591	<0.01	0.06	0.01	0.07	0.07	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_23_230223	ES2306591	<0.01	0.05	<0.01	0.05	0.05	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_24_230223	ES2306591	<0.01	0.07	0.01	0.08	0.08	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	24 Feb 2023	NT_0990_PFASMGMT_23	0990_SW016_230224	ES2306591	<0.01	0.09	0.01	0.10	0.10	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	28 Feb 2023	NT_0990_PFASOMP_23	0990_SW016_230228	ES2307099	<0.01	0.07	0.02	0.09	0.09	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	02 Mar 2023	NT_0990_PFASMGMT_23	0990_SW016_230302	ES2307254	<0.01	0.12	0.04	0.16	0.16	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	02 Mar 2023	NT_0990_PFASMGMT_23	0990_SW016_230302	ES2307254	<0.01	0.07	0.04	0.11	0.11	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Apr 2023	NT_0990_PFASMGMT_23	0990_SW016_01_230411	ES2313050	<0.01	0.37	0.17	0.54	0.57	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Apr 2023	NT_0990_PFASMGMT_23	0990_SW016_02_230411	ES2313050	0.01	0.42	0.18	0.60	0.66	-	<0.02	0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Apr 2023	NT_0990_PFASMGMT_23	0990_SW016_03_230411	ES2313050	<0.01	0.38	0.16	0.54	0.57	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Apr 2023	NT_0990_PFASMGMT_23	0990_SW016_04_230411	ES2313050	<0.01	0.40	0.17	0.57	0.60	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Apr 2023	NT_0990_PFASMGMT_23	0990_SW016_05_230411	ES2313050	<0.01	0.38	0.17	0.55	0.58	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	12 Apr 2023	NT_0990_PFASMGMT_23	0990_SW016_06_230412	ES2313050	<0.01	0.34	0.16	0.50	0.53	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	12 Apr 2023	NT_0990_PFASMGMT_23	0990_SW016_07_230412	ES2313050	<0.01	0.36	0.18	0.54	0.57	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	12 Apr 2023	NT_0990_PFASMGMT_23	0990_SW016_08_230412	ES2313050	0.01	0.37	0.16	0.53	0.57	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	12 Apr 2023	NT_0990_PFASMGMT_23	0990_SW016_09_230412	ES2313050	<0.01	0.38	0.16	0.54	0.61	-	<0.02	0.02	<0.02	<0.02	-	<0.1	0.02	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Aug 2023	NT_0990_PFASMGMT_23	0990_SW016_0.0_221111	ES2329043	<0.01	0.38	0.04	0.42	0.42	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Aug 2023	NT_0990_PFASMGMT_23	0990_SW016_0.4_221111	ES2329043	<0.01	0.42	0.04	0.46	0.46	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Aug 2023	NT_0990_PFASMGMT_23	0990_SW016_0.6_221111	ES2329043	<0.01	0.42	0.04	0.46	0.46	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Aug 2023	NT_0990_PFASMGMT_23	0990_SW016_0.8_221111	ES2329043	<0.01	0.44	0.04	0.48	0.48	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	23 Aug 2023	NT_0990_PFASMGMT_23	0990_SW016_1.0_221111	ES2329043	<0.01	0.44	0.04	0.48	0.48	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	13 Nov 2023	NT_0990_PFASOMP_23	0990_SW016_231113	ES2339515	<0.01	0.24	0.05	0.29	0.31	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	13 Dec 2023	NT_0990_PFASMGMT_23	0990_SW016_231213	ES2343282	<0.01

Table T4
Current and Historical Surface Water Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T4 - Current and Historical Surface Water Analytical Results

					PFAS					PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids											PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexadecanoic acid (PFHxDA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.001	0.0001	0.001	0.001	0.002	0.01	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.005	0.002	0.005	0.005	0.002	0.005
Human Receptors																																				
PFAS in Drinking Water (ADWG 2025)					0.2	0.008	0.03				1																									
PFAS NEMP 2025 Recreational water quality guideline					10	2	2	2																												
Ecological Receptors																																				
PFAS NEMP 2025 Freshwater 99%					19	0.00023																														
SW016	09 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_02_240209	ES2404747	0.02	0.40	0.29	0.69	0.84	-	0.03	0.03	<0.02	<0.02	-	<0.1	0.03	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	09 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_03_240210	ES2404747	0.02	0.39	0.27	0.66	0.81	-	0.03	0.03	<0.02	<0.02	-	<0.1	0.03	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	09 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_04_240210	ES2404747	0.02	0.36	0.30	0.66	0.81	-	0.03	0.03	<0.02	<0.02	-	<0.1	0.03	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	10 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_05_240210	ES2404747	0.01	0.40	0.22	0.62	0.71	-	<0.02	0.02	<0.02	<0.02	-	<0.1	0.03	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	10 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_06_240210	ES2404747	<0.01	0.24	0.09	0.33	0.33	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	10 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_07_240210	ES2404747	<0.01	0.16	0.06	0.22	0.22	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	10 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_08_240210	ES2404747	<0.01	0.18	0.08	0.26	0.26	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	10 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_09_240210	ES2404747	<0.01	0.20	0.10	0.30	0.30	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	10 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_10_240210	ES2404747	<0.01	0.23	0.10	0.33	0.35	-	0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	10 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_12_240210	ES2404747	<0.01	0.23	0.11	0.34	0.36	-	0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	10 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_14_240210	ES2404747	<0.01	0.27	0.13	0.40	0.45	-	0.03	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	10 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_16_240210	ES2404747	<0.01	0.23	0.12	0.35	0.40	-	0.03	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	10 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_18_240211	ES2404747	<0.01	0.26	0.13	0.39	0.46	-	0.03	0.02	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_20_240211	ES2404747	<0.01	0.26	0.12	0.38	0.43	-	0.03	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	11 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_21_240211	ES2404747	<0.01	0.28	0.14	0.42	0.47	-	0.03	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	12 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_240212	ES2404741	<0.01	0.12	0.04	0.16	0.16	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	12 Feb 2024	NT_0990_PFASMGMT_24	0990_SW016_240212	ES2404747	<0.01	0.07	0.03	0.10	0.10	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	12 Mar 2024	NT_0990_PFASMGMT_24	0990_SW016_11_240313	ES2408295	<0.01	0.09	0.06	0.15	0.15	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	12 Mar 2024	NT_0990_PFASOMP_24	0990_SW016_240312	ES2408294	<0.01	0.12	0.07	0.19	0.19	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	13 Mar 2024	NT_0990_PFASMGMT_24	0990_SW016_01_240313	ES2408295	<0.01	0.12	0.06	0.18	0.20	-	0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	13 Mar 2024	NT_0990_PFASMGMT_24	0990_SW016_03_240313	ES2408295	<0.01	0.09	0.06	0.15	0.15	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	13 Mar 2024	NT_0990_PFASMGMT_24	0990_SW016_05_240313	ES2408295	<0.01	0.10	0.06	0.16	0.16	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	13 Mar 2024	NT_0990_PFASMGMT_24	0990_SW016_08_240313	ES2408295	<0.01	0.09	0.06	0.15	0.15	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	13 Mar 2024	NT_0990_PFASMGMT_24	0990_SW016_10_240313	ES2408295	<0.01	0.10	0.07	0.17	0.17	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	13 Mar 2024	NT_0990_PFASMGMT_24	0990_SW016_13_240314	ES2408295	<0.01	0.08	0.06	0.14	0.14	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	13 Mar 2024	NT_0990_PFASMGMT_24	0990_SW016_15_240313	ES2408295	<0.01	0.10	0.05	0.15	0.15	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	13 Mar 2024	NT_0990_PFASMGMT_24	0990_SW016_17_240313	ES2408295	<0.01	0.08	0.04	0.12	0.12	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	13 Mar 2024	NT_0990_PFASMGMT_24	0990_SW016_20_240313	ES2408295	<0.01	0.07	0.04	0.11	0.11	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	15 Mar 2024	NT_0990_PFASMGMT_24	SW016_01_240315	ES2408743	<0.01	0.19	0.14	0.33	0.44	-	0.04	0.03	<0.02	<0.02	-	<0.1	<0.02	0.04	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	20 Nov 2024	NT_0990_PFASMGMT_24	0990_SW016_15_241120	ES2437917	0.02	0.42	0.17	0.59	0.72	<0.02	0.03	0.02	<0.02	<0.02	-	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	20 Nov 2024	NT_0990_PFASMGMT_24	0990_SW016_16_241120	ES2437917	0.02	0.46	0.16	0.62	0.75	<0.02	0.03	0.02	<0.02	<0.02	-	<0.1	<0.02	0.06	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	20 Nov 2024	NT_0990_PFASMGMT_24	0990_SW016_17_241120	ES2437917	<0.01	0.43	0.09	0.52	0.54	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	20 Nov 2024	NT_0990_PFASMGMT_24	0990_SW016_18_241120	ES2437917	<0.01	0.42	0.08	0.50	0.50	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	20 Nov 2024	NT_0990_PFASMGMT_24	0990_SW016_19_241120	ES2437917	<0.01	0.44	0.08	0.52	0.52	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	20 Nov 2024	NT_0990_PFASMGMT_24	0990_SW016_20_241120	ES2437917	<0.01	0.45	0.08	0.53	0.53	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	20 Nov 2024	NT_0990_PFASMGMT_24	0990_SW016_21_241120	ES2437917	<0.01	0.47	0.08	0.55	0.55	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	0.55	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	20 Nov 2024	NT_0990_PFASMGMT_24	0990_SW016_22_241120	ES2437917	<0.01	0.44	0.09	0.53	0.53	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	20 Nov 2024	NT_0990_PFASMGMT_24	0990_SW016_23_241120	ES2437917	<0.01	0.42	0.10	0.52	0.54	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	20 Nov 2024	NT_0990_PFASMGMT_24	0990_SW016_24_241120	ES2437917	<0.01	0.48	0.09	0.57	0.57	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_1_241203	ES2439950	<0.01	0.39	0.07	0.46	0.46	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_2_241203	ES2439950	<0.01	0.47	0.06	0.53	0.53	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_3_241203	ES2439950	<0.01	0.37	0.03	0.40	0.40	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_4_241203	ES2439950	<0.01	0.30	0.03	0.33	0.33	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_5_241203	ES2439950	<0.01	0.31	0.03	0.34	0.34	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_6_241203	ES2439950	<0.01	0.33	0.03	0.36	0.36	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_7_241203	ES2439950	<0.01	0.32	0.03	0.35	0.35	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_8_241203	ES2439950	<0.01	0.35	0.03	0.38	0.38	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_9_241203	ES2439950	<0.01	0.36	0.04	0.40	0.40	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_10_241203	ES2439950	<0.01	0.37	0.04	0.41	0.41	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_12_241203	ES2439950	<0.01	0.34	0.05	0.39	0.39	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	03 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_14_241203	ES2439950	<0.01	0.36	0.05	0.41	0.41	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	04 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_16_241204	ES2439950	<0.01	0.43	0.06	0.49	0.49	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	04 Dec 2024	NT_0990_PFASMGMT_24	0990_SW016_18_241204	ES2439950	<0.01	0.39	0.06	0.45	0.45	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	04 Dec 2024	NT_0990_PFASOMP_24	0990_SW016_241205	ES2439696	<0.01	0.40	0.06	0.46	0.46	<0.02	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	16 Jan 2025	NT_0990_PFASMGMT_25	0990_SW016_1_250116	ES2502939	<0.01	0.15	0.02	0.17	0.17	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	16 Jan 2025	NT_0990_PFASMGMT_25	0990_SW016_2_250116	ES2502939	<0.01	0.18	0.02	0.20	0.20	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	16 Jan 2025	NT_0990_PFASMGMT_25	0990_SW016_4_250116	ES2502939	<0.01	0.16	0.01	0.17	0.17	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	16 Jan 2025	NT_0990_PFASMGMT_25	0990_SW016_5_250116	ES2502939	<0.01	0.12	<0.01	0.12	0.12	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	16 Jan 2025	NT_0990_PFASMGMT_25	0990_SW016_6_250116	ES2502939	<0.01	0.12	<0.01	0.12	0.12	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW016	16 Jan 2025	NT_0990_PFASMGMT_25	0990_SW016_7_250116	ES2502939

Table T4
Current and Historical Surface Water Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T4 - Current and Historical Surface Water Analytical Results

					PFAS					PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids											PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexadecanoic acid (PFHxDA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.001	0.0001	0.001	0.001	0.002	0.01	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.002	0.005	0.002	0.005	0.005	0.002	0.005
Human Receptors																																				
PFAS in Drinking Water (ADWG 2025)					0.2	0.008	0.03				1																									
PFAS NEMP 2025 Recreational water quality guideline					10	2	2	2																												
Ecological Receptors																																				
PFAS NEMP 2025 Freshwater 99%					19	0.00023																														
SW100	20 Dec 2021	NT_0990_PFASOMP	0990_SW100_211220	ES2146720	<0.01	0.06	0.04	0.10	0.10	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW100	16 Mar 2022	NT_0990_PFASOMP	0990_SW100_220316	ES2209387	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW100	24 Oct 2022	NT_0990_PFASOMP	0990_SW100_221024	ES2238126	<0.01	0.11	0.08	0.19	0.19	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW100	29 Mar 2023	NT_0990_PFASOMP_23	0990_SW100_230329	ES2311363	<0.01	0.01	<0.01	0.01	0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW100	18 Sep 2023	NT_0990_PFASOMP_23	0990_SW100_230918	ES2332783	<0.01	0.14	0.10	0.24	0.26	-	<0.02	0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW100	12 Mar 2024	NT_0990_PFASOMP_24	0990_SW100_240312	ES2408294	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW100	30 Oct 2024	NT_0990_PFASOMP_24	0990_SW100_241030	ES2435723	<0.01	0.16	0.11	0.27	0.27	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW100	19 Mar 2025	NT_0990_PFASOMP_25	0990_SW100_250319	ES2508367	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	09 Aug 2017	NT_0990_PFAS	0990_SW108_170809	561059	<0.01	0.07	0.04	0.11	0.11	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	30 Aug 2017	NT_0990_PFAS	0990_SW108_170830	561811	<0.01	0.09	0.07	0.16	0.16	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	26 Sep 2017	NT_0990_PFAS	0990_SW173_170926	566728	<0.01	0.14	0.12	0.26	0.29	-	0.01	0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	12 Oct 2017	NT_0990_PFAS	0990_SW108_171012	567867	<0.01	0.13	0.07	0.2	0.22	-	0.01	0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	15 Dec 2017	NT_0990_PFAS	0990_SW108_171215	578312	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	06 Feb 2018	NT_0990_PFAS	0990_SW108_180206	584157	<0.01	0.02	0.02	0.04	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	20 Mar 2018	NT_0990_PFAS	0990_SW108_180320	590602	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	01 May 2018	NT_0990_PFAS	0990_SW108_180501	597082	<0.01	0.03	0.02	0.05	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	17 Jul 2018	NT_0990_PFAS	0990_SW108_180717	608539	<0.01	0.05	0.03	0.08	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	07 Aug 2018	NT_0990_PFAS	0990_SW108_180807	611483	<0.01	0.11	0.05	0.16	0.16	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	16 Aug 2018	NT_0990_PFAS	0990_SW108_180816	613201	<0.01	0.08	0.05	0.13	0.13	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	14 Sep 2018	NT_0990_PFAS	0990_SW108_180914	618146	<0.01	0.12	0.10	0.22	0.27	-	0.01	0.02	<0.01	<0.01	-	<0.05	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	11 Oct 2018	NT_0990_PFAS	0990_SW108_181011	622536	<0.01	0.13	0.09	0.22	0.26	-	0.01	0.02	<0.01	<0.01	-	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	12 Dec 2018	NT_0990_PFAS	0990_SW108_181212	633267	<0.01	0.03	0.02	0.05	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	28 Feb 2019	NT_0990_PFAS	0990_SW108_190228	644424	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	27 Mar 2019	NT_0990_PFAS	0990_SW108_190327	648349	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	12 Jun 2019	NT_0990_PFAS	0990_SW108_190612	661334	<0.01	0.08	0.06	0.14	0.14	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW108	31 Oct 2019	NT_0990_PFASOMP	0990_SW108_191031	ES1936083	<0.01	0.14	0.13	0.27	0.31	-	0.02	0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	18 Nov 2019	NT_0990_PFASOMP	0990_SW108_191118	ES1938861	<0.01	0.25	0.17	0.42	0.50	-	0.03	0.03	<0.02	<0.02	-	<0.1	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	18 Feb 2020	NT_0990_PFASOMP	0990_SW108_200217	ES2005777	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	24 Apr 2020	NT_0990_PFASOMP	0990_SW108_200424	ES2014275	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	22 Jul 2020	NT_0990_PFASOMP	0990_SW108_200720	ES2025129	<0.01	0.14	0.10	0.24	0.24	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	16 Nov 2020	NT_0990_PFASOMP	0990_SW108_201116	ES2041113	<0.01	0.09	0.09	0.18	0.18	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	01 Feb 2021	NT_0990_PFASOMP	0990_SW108_210201	ES2103448	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	22 Apr 2021	NT_0990_PFASOMP	0990_SW108_210422	ES2115517	<0.01	0.02	<0.02	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	02 Jun 2021	NT_0990_PFASOMP	0990_SW108_210602	ES2121388	<0.01	0.06	0.05	0.11	0.11	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	06 Jul 2021	NT_0990_PFASOMP	0990_SW108_210606	ES2124685	<0.01	0.06	0.04	0.10	0.10	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	10 Oct 2021	NT_0990_PFASOMP	0990_SW108_211010	ES2136974	<0.01	0.14	0.11	0.25	0.25	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	21 Dec 2021	NT_0990_PFASOMP	0990_SW108_211220	ES2146863	<0.01	0.02	0.01	0.03	0.03	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	16 Mar 2022	NT_0990_PFASOMP	0990_SW108_220315	ES2209387	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	14 Jun 2022	NT_0990_PFASOMP	0990_SW108_220614	ES2221046	<0.01	0.12	0.08	0.20	0.20	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	24 Oct 2022	NT_0990_PFASOMP	0990_SW108_221024	ES2238127	<0.01	0.12	0.09	0.21	0.21	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	18 Jan 2023	NT_0990_PFASOMP_23	0990_SW108_230118	ES2301808	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	03 Apr 2023	NT_0990_PFASOMP_23	0990_SW108_230403	ES2311363	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	24 Jul 2023	NT_0990_PFASOMP_23	0990_SW108_230724	ES2325102	<0.01	0.10	0.06	0.16	0.16	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	18 Sep 2023	NT_0990_PFASOMP_23	0990_SW108_230918	ES2332783	<0.01	0.14	0.09	0.23	0.25	-	<0.02	0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	16 Jan 2024	NT_0990_PFASOMP_24	0990_SW108_240116	ES2401443	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	10 Apr 2024	NT_0990_PFASOMP_24	0990_SW108_240410	ES2412006	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	19 Jun 2024	NT_0990_PFASOMP_24	0990_SW108_240619	ES2420210	<0.01	0.04	0.03	0.07	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	30 Oct 2024	NT_0990_PFASOMP_24	0990_SW108_241030	ES2435723	<0.01	0.12	0.09	0.21	0.21	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	13 Jan 2025	NT_0990_PFASOMP_25	0990_SW108_250113	ES2501556	<0.01	0.02	<0.01	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW108	19 Mar 2025	NT_0990_PFASOMP_25	0990_SW108_250319	ES2508367	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW110	07 Jul 2017	NT_0990_PFAS	0990_SW110_170707	553958	0.001	0.008	0.005	<0.01	<0.1	-	0.001	0.001	<0.001	<0.001	-	<0.005	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
SW110	12 Oct 2017	NT_0990_PFAS	0990_SW110_171012	567875	<0.01	0.03	0.02	0.05	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW110	15 Dec 2017	NT_0990_PFAS	0990_SW110_171215	578312	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW110	06 Feb 2018	NT_0990_PFAS	0990_SW110_180206	584157	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW110	21 Mar 2018	NT_0990_PFAS	0990_SW110_180321	590881	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW110	01 May 2018	NT_0990_PFAS	0990_SW110_180501	597082	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW110	13 Sep 2018	NT_0990_PFAS	0990_SW110_180913	618146	<0.01	0.02	0.03	0.05	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW110	12 Dec 2018	NT_0990_PFAS	0990_SW110_181212	633267	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW110	27 Mar 2019	NT_0990_PFAS	0990_SW110_190327	648349	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW110	30 Oct 2019	NT_0990_PFASOMP	0990_SW110_191030	ES1936083	<0.01	0.01	<0.02	0.01	0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW110	05 May 2020	NT_0990_PFASOMP	0990_SW110_200505	ES2016268	<0.01

Table T4
Current and Historical Surface Water Analytical Results
PFAS Ongoing Monitoring Plan
Department of Defence - RAAF Base Tindal

Table T4 - Current and Historical Surface Water Analytical Results

					PFAS					PFAS - Perfluoroalkyl Sulfonic Acids					PFAS - Perfluoroalkyl Carboxylic Acids											PFAS - (n:2) Fluorotelomer Sulfonic Acids				PFAS - Perfluoroalkyl Sulfonamides						
					Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorodecane sulfonic acid (PFDS)	Perfluorohexadecanoic acid (PFHxDA)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LOR					0.001	0.0001	0.001	0.001	0.002	0.01	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.001	0.001	0.002	0.005	0.002	0.005	0.005	0.002	0.005
Human Receptors																																				
PFAS in Drinking Water (ADWG 2025)					0.2	0.008	0.03				1																									
PFAS NEMP 2025 Recreational water quality guideline					10	2	2	2																												
Ecological Receptors																																				
PFAS NEMP 2025 Freshwater 99%					19	0.00023																														
SW153	25 Sep 2018	NT_0990_PFAS	0990_SW153_180925	620163	<0.01	0.02	0.02	0.04	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	11 Oct 2018	NT_0990_PFAS	0990_SW153_181011	622536	<0.01	0.02	0.01	0.03	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	12 Dec 2018	NT_0990_PFAS	0990_SW153_181212	633267	<0.01	0.02	0.01	0.03	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	28 Feb 2019	NT_0990_PFAS	0990_SW153_190228	644424	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	27 Mar 2019	NT_0990_PFAS	0990_SW153_190327	648349	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	12 Jun 2019	NT_0990_PFAS	0990_SW153_190612	661334	<0.01	0.01	0.01	0.02	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW153	31 Oct 2019	NT_0990_PFASOMP	0990_SW153_191031	ES1936083	<0.01	0.01	<0.02	0.01	0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	18 Feb 2020	NT_0990_PFASOMP	0990_SW153_200218	ES2005777	<0.01	0.01	<0.02	0.01	0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	24 Apr 2020	NT_0990_PFASOMP	0990_SW153_200424	ES2014275	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	22 Jul 2020	NT_0990_PFASOMP	0990_SW153_200721	ES2025129	<0.01	0.01	<0.02	0.01	0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	16 Nov 2020	NT_0990_PFASOMP	0990_SW153_201116.	ES2041113	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	01 Feb 2021	NT_0990_PFASOMP	0990_SW153_210201	ES2103448	<0.01	0.02	<0.02	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	23 Apr 2021	NT_0990_PFASOMP	0990_SW153_210423	ES2115517	<0.01	0.03	<0.02	0.03	0.03	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	06 Jul 2021	NT_0990_PFASOMP	0990_SW153_210606	ES2124685	<0.01	0.02	<0.02	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	10 Oct 2021	NT_0990_PFASOMP	0990_SW153_211010	ES2136974	<0.01	0.01	<0.02	0.01	0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	20 Dec 2021	NT_0990_PFASOMP	0990_SW153_211220	ES2146863	<0.01	0.01	0.01	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	16 Mar 2022	NT_0990_PFASOMP	0990_SW153_220316	ES2209382	<0.01	0.02	0.01	0.03	0.03	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	14 Jun 2022	NT_0990_PFASOMP	0990_SW153_220614	ES2221046	<0.01	0.02	0.01	0.03	0.03	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	24 Oct 2022	NT_0990_PFASOMP	0990_SW153_221024	ES2238127	<0.01	0.02	0.01	0.03	0.03	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	17 Jan 2023	NT_0990_PFASOMP_23	0990_SW153_230117	ES2301808	<0.01	0.02	0.01	0.03	0.03	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	03 Apr 2023	NT_0990_PFASOMP_23	0990_SW153_230403	ES2311363	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	24 Jul 2023	NT_0990_PFASOMP_23	0990_SW153_230724	ES2325102	<0.01	0.02	0.01	0.03	0.03	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	18 Sep 2023	NT_0990_PFASOMP_23	0990_SW153_230918	ES2332783	<0.01	0.02	<0.01	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	16 Jan 2024	NT_0990_PFASOMP_24	0990_SW153_240116	ES2401443	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	10 Apr 2024	NT_0990_PFASOMP_24	0990_SW153_240410	ES2412006	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	19 Jun 2024	NT_0990_PFASOMP_24	0990_SW153_240619	ES2420210	<0.01	0.02	0.01	0.03	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	30 Oct 2024	NT_0990_PFASOMP_24	0990_SW153_241030	ES2435723	<0.01	0.02	<0.01	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	13 Jan 2025	NT_0990_PFASOMP_25	0990_SW153_250113	ES2501556	<0.01	<0.01	<0.01	0.02	0.02	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW153	19 Mar 2025	NT_0990_PFASOMP_25	0990_SW153_250319	ES2508367	<0.01	0.02	0.02	0.04	0.04	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW161	22 Aug 2017	NT_0990_PFAS	0990_SW161_170822	560143	0.002	0.0096	<0.001	0.0096	0.0156	-	<0.001	<0.001	<0.001	<0.001	-	<0.005	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
SW161	11 Sep 2017	NT_0990_PFAS	0990_SW161_170911	562857	<0.001	0.0065	<0.001	<0.01	<0.1	-	<0.001	<0.001	<0.001	<0.001	-	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
SW161	20 Sep 2017	NT_0990_PFAS	0990_SW161_170920	564886	<0.001	0.003	<0.001	0.003	<0.01	-	<0.001	<0.001	<0.001	<0.001	-	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
SW161	20 Sep 2017	NT_0990_PFAS	0990_SW167_170920	564886	<0.001	0.004	<0.001	0.004	<0.01	-	<0.001	<0.001	<0.001	<0.001	-	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
SW161	18 Oct 2017	NT_0990_PFAS	0990_SW161_171018	568582	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW161	15 Dec 2017	NT_0990_PFAS	0990_SW161_171215	578312	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW161	15 Dec 2017	NT_0990_PFAS	0990_SW167_171215	578312	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW161	06 Feb 2018	NT_0990_PFAS	0990_SW161_180206	584157	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW161	06 Feb 2018	NT_0990_PFAS	0990_SW167_180206	584157	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW161	20 Mar 2018	NT_0990_PFAS	0990_SW161_180320	590602	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW161	20 Mar 2018	NT_0990_PFAS	0990_SW167_180320	590602	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW161	01 May 2018	NT_0990_PFAS	0990_SW167_180501	597082	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW161	18 Jan 2019	NT_0990_PFAS	0990_SW167_190118	637112	<0.01	<0.01	<0.01	<0.01	<0.1	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW161	31 Oct 2019	NT_0990_PFASOMP	0990_SW161_191031	ES1936083	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW161	20 Apr 2020	NT_0990_PFASOMP	0990_SW161_200420	ES2014275	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW161	17 Nov 2020	NT_0990_PFASOMP	0990_SW161_201117	ES2041113	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW161	16 Dec 2020	NT_0990_PFASOMP	0990_SW161_201216	ES2044940	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW161	23 Apr 2021	NT_0990_PFASOMP	0990_SW161_210423	ES2115517	<0.01	<0.01	<0.02	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW161	20 Dec 2021	NT_0990_PFASOMP	0990_SW161_211220	ES2146720	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW161	16 Mar 2022	NT_0990_PFASOMP	0990_SW161_220316	ES2209387	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW161	24 Oct 2022	NT_0990_PFASOMP	0990_SW161_221024	ES2238126	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW161	27 Oct 2022	NT_0990_PFASOMP	0990_SW161_221027	ES2240261	<0.01	0.16	0.12	0.28	0.30	-	<0.02	0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW161	29 Mar 2023	NT_0990_PFASOMP_23	0990_SW161_230329	ES2311363	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW161	18 Sep 2023	NT_0990_PFASOMP_23	0990_SW161_230918	ES2332783	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW161	11 Mar 2024	NT_0990_PFASOMP_24	0990_SW161_240311	ES2408294	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW161	01 Nov 2024	NT_0990_PFASOMP_24	0990_SW161_221101	ES2435723	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW161	19 Mar 2025	NT_0990_PFASOMP_25	0990_SW161_250319	ES2508367	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.02	<0.02	<0.02	<0.02	-	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.02	<0.05	<0.02	<0.05	<0.05	<0.02	<0.05
SW161	08 May 2025	NT_0990_PFASOMP_25	0990_SW161_250508	ES2513387	<0.002	<0.002	<0.002	<0.002	<0.002	-	<0.002	<0.002	<0.002	<0.002	<0.005	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.002	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
SW188	18 Dec 2017	NT_0990_PFAS	0990_SW118_171218	578635	<0.01	0.21	0.08	0.29	0.3	-	<0.01	<0.01	<0.01	<0.01	-	<0.05	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW188	16 Feb 2018	NT_0990_PFAS	0990_SW188_180216	585791	0.08	2.6	0.81	3.41	4.26	-	0.12	0.11	0.06	<0.01	-	0.06	0.09	0.27	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SW188	23 Feb 2018	NT_0990_PFAS	0990_SW188_180223	587068	0.05	1.2	0.55	1.75	2.19	-	0.07	0.07	0.04	<0.01	-	<0.05	0.04	0.14	0.03	<0.01	<0.01	<0.01	<0.

Table T5
Current and Historical Biota Analytical Results
PFAS Ongoing Monitoring Plan
Deaprtment of Defence - RAAF Base Tindal

Table T5 - Current and Historical Biota Analytical Results

						PFAS (Full Suite)																															
						Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropentanesulfonic acid (PFPeS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoropentanesulfonic acid (PFPeS)	Perfluorooctanesulfonic acid (PFOS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR						0.0003	0.0003	0.0003	0.0005	0.0005	0.002	0.0005	0.0005	0.0005	0.001	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
		Department of Health 2019 2-6 years Crusaceans (invertebrate)				0.52	0.065	0.065	0.065																												
		Department of Health 2019 2-6 years Finfish (fish)				0.041	0.0052	0.0052	0.0052																												
Location Code	Date	Field ID	Fauna Group	Species	Lab Report Number																																
BIO078	27 Sep 2017	0990_FH186_170927	Fish	Cherabin whole	568693	<0.0005	0.053	0.0012	0.0542	0.0542	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	26 Feb 2018	0990_FH316_180226	Fish	Barramundi fillet	595033	<0.0005	0.013	<0.0003	0.013	0.013	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	26 Feb 2018	0990_FH317_180226	Fish	Barramundi fillet	595033	<0.0005	0.016	<0.0003	0.016	0.016	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	26 Feb 2018	0990_FH318_180226	Fish	Barramundi liver	595033	<0.0005	0.15	0.0009	0.1509	0.1516	-	<0.0005	<0.0005	0.0007	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	26 Feb 2018	0990_FH319_180226	Fish	Barramundi fillet	595033	<0.0005	0.0085	<0.0003	0.0085	0.0085	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	26 Feb 2018	0990_FH320_180226	Fish	Barramundi fillet	595033	<0.0005	0.013	<0.0003	0.013	0.013	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	26 Feb 2018	0990_FH321_180226	Fish	Barramundi fillet	595033	<0.0005	0.02	<0.0003	0.02	0.02	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	26 Feb 2018	0990_FH322_180226	Fish	Barramundi liver	595033	<0.0005	0.1	<0.0003	0.1	0.1	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	26 Feb 2018	0990_FH323_180226	Fish	Barramundi fillet	595033	<0.0005	0.012	<0.0003	0.012	0.012	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	28 Feb 2018	0990_FH324_180228	Fish	Ord River Mullet gutted whole	595033	<0.0005	0.32	0.0006	0.3206	0.3212	-	<0.0005	<0.0005	0.0006	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	28 Feb 2018	0990_FH325_180228	Fish	Ord River Mullet gutted whole	595033	<0.0005	0.31	0.0004	0.3104	0.3109	-	<0.0005	<0.0005	0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	28 Feb 2018	0990_FH326_180228	Fish	Ord River Mullet gutted whole	595033	<0.0005	0.38	0.0005	0.3805	0.3811	-	<0.0005	<0.0005	0.0006	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	28 Feb 2018	0990_FH327_180228	Fish	Ord River Mullet gutted whole	595033	<0.0005	0.34	0.0005	0.3405	0.3411	-	<0.0005	<0.0005	0.0006	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	28 Feb 2018	0990_FH328_180228	Fish	Ord River Mullet fillet	595033	<0.0005	0.16	0.0004	0.1604	0.1604	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	28 Feb 2018	0990_FH329_180228	Fish	Ord River Mullet liver	595033	<0.0005	0.23	0.0009	0.2309	0.2317	-	<0.0005	<0.0005	0.0008	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	28 Feb 2018	0990_FH330_180228	Fish	Ord River Mullet fillet	595033	<0.0005	0.14	0.0005	0.1405	0.1405	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	01 Mar 2018	0990_FH339_180301	Fish	Ord River Mullet liver	595033	<0.0005	0.78	0.0018	0.7818	0.7832	-	<0.0005	<0.0005	0.0014	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	01 Mar 2018	0990_FH340_180301	Fish	Ord River Mullet fillet	595033	<0.0005	0.026	<0.0003	0.026	0.026	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	01 Mar 2018	0990_FH341_180301	Fish	Ord River Mullet fillet	595033	<0.0005	0.059	<0.0003	0.059	0.0597	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0007
BIO078	01 Mar 2018	0990_FH342_180301	Fish	Ord River Mullet fillet	595033	<0.0005	0.091	<0.0003	0.091	0.0918	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0008
BIO078	02 Mar 2018	0990_FH349_180302	Fish	Sooty Grunter liver	595033	<0.0005	0.31	0.0004	0.3104	0.3128	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0024	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	02 Mar 2018	0990_FH350_180302	Fish	Sooty Grunter fillet	595033	<0.0005	0.039	<0.0003	0.039	0.039	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	02 Mar 2018	0990_FH351_180302	Fish	Sooty Grunter fillet	595033	<0.0005	0.032	<0.0003	0.032	0.032	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	02 Mar 2018	0990_FH352_180302	Fish	Sooty Grunter fillet	595033	<0.0005	0.037	<0.0003	0.037	0.037	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	02 Mar 2018	0990_FH353_180302	Fish	Sooty Grunter fillet	595033	<0.0005	0.0003	<0.0003	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	02 Mar 2018	0990_FH354_180302	Fish	Sooty Grunter fillet	595033	<0.0005	0.064	<0.0003	0.064	0.064	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	02 Mar 2018	0990_FH362_180302	Fish	Sooty Grunter fillet	595033	<0.0005	0.053	<0.0003	0.053	0.053	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	02 Mar 2018	0990_FH363_180302	Fish	Sooty Grunter fillet	595033	<0.0005	0.034	<0.0003	0.034	0.034	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	02 Mar 2018	0990_FH364_180302	Fish	Sooty Grunter fillet	595033	<0.0005	0.012	<0.0003	0.012	0.012	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	02 Mar 2018	0990_FH365_180302	Fish	Sooty Grunter fillet	595033	<0.0005	0.078	<0.0003	0.078	0.078	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	02 Mar 2018	0990_FH366_180302	Fish	Sooty Grunter fillet	595033	<0.0005	0.021	<0.0003	0.021	0.021	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	02 Mar 2018	0990_FH367_180302	Fish	Sooty Grunter fillet	595033	<0.0005	0.0067	<0.0003	0.0067	0.0067	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	02 Mar 2018	0990_FH368_180302	Fish	Sooty Grunter fillet	595033	<0.0005	0.019	<0.0003	0.019	0.019	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	02 Mar 2018	0990_FH369_180302	Fish	Sooty Grunter fillet	595033	<0.0005	0.021	<0.0003	0.021	0.021	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	07 Mar 2018	0990_FH393_180307	Fish	Black Catfish fillet	595033	<0.0005	0.16	0.0023	0.1623	0.1635	-	<0.0005	<0.0005	0.0012	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	07 Mar 2018	0990_FH394_180307	Fish	Black Catfish fillet	595033	<0.0005	0.17	0.0032	0.1732	0.1742	-	<0.0005	<0.0005	0.0010	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	07 Mar 2018	0990_FH395_180307	Fish	Black Catfish fillet	595033	<0.0005	0.2	0.0041	0.2041	0.2056	-	<0.0005	<0.0005	0.0015	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	07 Mar 2018	0990_FH396_180307	Fish	Black Catfish fillet	595033	<0.0005	0.13	0.0038	0.1338	0.1348	-	<0.0005	<0.0005	0.0010	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	07 Mar 2018	0990_FH405_180307	Fish	Black Catfish fillet	595033	<0.0005	0.14	0.0006	0.1406	0.1411	-	<0.0005	<0.0005	0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	07 Mar 2018	0990_FH406_180307	Fish	Black Catfish fillet	595033	<0.0005	0.12	0.0007	0.1207	0.1213	-	<0.0005	<0.0005	0.0006	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	07 Mar 2018	0990_FH407_180307	Fish	Black Catfish fillet	595033	<0.0005	0.055	0.0008	0.0558	0.0558	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	08 Mar 2018	0990_FH408_180308	Fish	Black Catfish fillet	595033	<0.0005	0.13	0.0012	0.1312	0.1319	-	<0.0005	<0.0005	0.0007	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	08 Mar 2018	0990_FH409_180308	Fish	Black Catfish fillet	595033	<0.0005	0.029	0.001	0.03	0.03	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	08 Mar 2018	0990_FH410_180308	Fish	Black Catfish fillet	595033	<0.0005	0.031	0.0013	0.0323	0.0323	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	08 Mar 2018	0990_FH411_180308	Fish	Black Catfish fillet	595033	<0.0005	0.021	0.0008	0.0218	0.0218	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	08 Mar 2018	0990_FH412_180308	Fish	Black Catfish fillet	595033	<0.0005	0.0088	<0.0003	0.0088	0.0088	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	08 Mar 2018	0990_FH413_180308	Fish	Black Catfish fillet	595033	<0.0005	0.0052	<0.0003	0.0052	0.0052	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	09 Mar 2018	0990_FH414_180309	Fish	Black Catfish fillet	595033	<0.0005	0.086	0.0012	0.0872	0.0878	-	<0.0005	<0.0005	0.0006	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	09 Mar 2018	0990_FH415_180309	Fish	Black Catfish fillet	595033	<0.0005	0.081	0.0012	0.0822	0.0827	-	<0.0005	<0.0005	0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	09 Mar 2018	0990_FH416_180309	Fish	Black Catfish fillet	595033	<0.0005	0.048	0.0012	0.0492	0.0492	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	09 Mar 2018	0990_FH417_180309	Fish	Black Catfish fillet	595033	<0.0005	0.14	0.0037	0.1437	0.1448	-	<0.0005	<0.0005	0.0011	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	09 Mar 2018	0990_FH418_180309	Fish	Black Catfish fillet	595033	<0.0005	0.094	0.0022	0.0962	0.097	-	<0.0005	<0.0005	0.0008	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	09 Mar 2018	0990_FH419_180309	Fish	Black Catfish fillet	595033	<0.0005	0.07	0.0022	0.0722	0.0727	-	<0.0005	<0.0005	0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	15 Mar 2018	0990_FH441_180315	Fish	Sleepy Cod fillet	595033	<0.0005	0.01	<0.0003	0.01	0.01	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	15 Mar 2018	0990_FH443_180315	Fish	Sleepy Cod fillet	595033	<0.0005	0.0069	<0.0003	0.0069	0.0069	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005

Table T5
Current and Historical Biota Analytical Results
PFAS Ongoing Monitoring Plan
Deaprtment of Defence - RAAF Base Tindal

Table T5 - Current and Historical Biota Analytical Results

						PFAS (Full Suite)																															
						Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropentanesulfonic acid (PFPeS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoropentanesulfonic acid (PFPeS)	Perfluorooctanesulfonic acid (PFOS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR						0.0003	0.0003	0.0003	0.0005	0.0005	0.002	0.0005	0.0005	0.0005	0.001	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
		Department of Health 2019 2-6 years Crusaceans (invertebrate)				0.52	0.065	0.065	0.065																												
		Department of Health 2019 2-6 years Finfish (fish)				0.041	0.0052	0.0052	0.0052																												
Location Code	Date	Field ID	Fauna Group	Species	Lab Report Number																																
BIO078	18 Dec 2018	0990_FH418_181218	Fish	Bony Bream whole minus guts	635460	<0.0003	0.013	<0.0003	0.013	0.013	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	18 Dec 2018	0990_FH419_181218	Fish	Bony Bream whole minus guts	635460	<0.0003	0.031	<0.0003	0.031	0.031	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	18 Dec 2018	0990_FH421_181218	Reptile - Reptile - turtle	Diamond Head Reptile - turtle flesh and bone	635460	<0.0003	0.038	<0.0003	0.038	0.038	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	18 Dec 2018	0990_FH423_181218	Reptile - Reptile - turtle	Diamond Head Reptile - turtle flesh and bone	635460	<0.0003	0.033	<0.0003	0.033	0.033	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	18 Dec 2018	0990_FH424_181218	Reptile - Reptile - turtle	Diamond Head Reptile - turtle guts	635460	<0.0003	0.074	<0.0003	0.074	0.074	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO078	19 Nov 2019	0990_BIOAFA180_191119	Fish	Barramundi (Lates calcarifer)	ES1938861	<0.001	0.004	<0.001	-	0.004	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA181_191119	Fish	Black Catfish (Neosilurus ater)	ES1938861	<0.001	0.013	<0.001	-	0.013	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA187_191119	Fish	Blue Catfish (Neoarius graeffei)	ES1938861	<0.001	0.007	<0.001	-	0.007	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA188_191119	Fish	Giant Gudgeon (Oxyeleotris selheimi)	ES1938861	<0.001	0.004	<0.001	-	0.004	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA189_191119	Fish	Giant Gudgeon (Oxyeleotris selheimi)	ES1938861	<0.001	0.022	<0.001	-	0.022	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA191_191119	Fish	Bony Bream (Nematalosa erebi)	ES1938861	<0.001	0.014	<0.001	-	0.014	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA192_191119	Fish	Bony Bream (Nematalosa erebi)	ES1938861	<0.001	0.019	<0.001	-	0.019	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA193_191119	Fish	Bony Bream (Nematalosa erebi)	ES1938861	<0.001	0.012	<0.001	-	0.012	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA194_191119	Fish	Bony Bream (Nematalosa erebi)	ES1938861	<0.001	0.02	<0.001	-	0.02	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA195_191119	Fish	Mullet (Planiliza ordensis)	ES1938861	<0.001	0.019	<0.001	-	0.019	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA196_191119	Fish	Mullet (Planiliza ordensis)	ES1938861	<0.001	0.04	<0.001	-	0.04	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA197_191119	Fish	Mullet (Planiliza ordensis)	ES1938861	<0.001	0.03	<0.001	-	0.03	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA198_191119	Fish	Sooty Grunter / Black Bream (Hephaestus fuliginosus)	ES1938861	<0.001	0.015	<0.001	-	0.015	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA201_191119	Fish	Butler's Grunter (Syncomistes butleri)	ES1938861	<0.001	0.009	<0.001	-	0.009	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA204_191119	Crustacean	Cherabin (Macrobrachium spinipes)	ES1938861	<0.001	0.003	<0.001	-	0.003	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA205_191119	Crustacean	Cherabin (Macrobrachium spinipes)	ES1938861	<0.001	0.005	<0.001	-	0.005	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA206_191119	Crustacean	Cherabin (Macrobrachium spinipes)	ES1938861	<0.001	0.006	<0.001	-	0.006	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA207_191119	Crustacean	Cherabin (Macrobrachium spinipes)	ES1938861	<0.001	0.018	0.001	-	0.019	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA208_191119	Reptile - turtle	Diamond-head Reptile - turtle (Emydura subglobosa)	ES1938861	<0.001	0.025	<0.001	-	0.025	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA209_191119	Reptile - turtle	Diamond-head Reptile - turtle (Emydura subglobosa)	ES1938861	<0.001	0.789	<0.001	-	0.789	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA210_191119	Reptile - turtle	Northern Red-faced Reptile - turtle (Emydura victoriae)	ES1938861	<0.001	0.018	<0.001	-	0.018	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA211_191119	Reptile - turtle	Northern Red-faced Reptile - turtle (Emydura victoriae)	ES1938861	<0.001	0.262	<0.001	-	0.262	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA212_191119	Reptile - turtle	Northern Red-faced Reptile - turtle (Emydura victoriae)	ES1938861	<0.001	0.019	<0.001	-	0.019	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.019	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	19 Nov 2019	0990_BIOAFA213_191119	Reptile - turtle	Northern Red-faced Reptile - turtle (Emydura victoriae)	ES1938861	<0.001	0.132	<0.001	-	0.132	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	07 Jul 2020	0990_BIOAFA214_200707	Fish	Barramundi (Lates calcarifer)	ES2024793	<0.001	0.006	<0.001	-	0.006	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	07 Jul 2020	0990_BIOAFA215_200707	Fish	Barramundi (Lates calcarifer)	ES2024793	<0.001	0.007	<0.001	-	0.009	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	07 Jul 2020	0990_BIOAFA216_200707	Fish	Barramundi (Lates calcarifer)	ES2024793	<0.001	0.007	<0.001	-	0.011	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	0.004	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	07 Jul 2020	0990_BIOAFA217_200707	Fish	Mullet (Planiliza ordensis)	ES2024793	<0.001	0.02	<0.001	-	0.02	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	07 Jul 2020	0990_BIOAFA218_200707	Fish	Mullet (Planiliza ordensis)	ES2024793	<0.001	0.019	<0.001	-	0.019	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	07 Jul 2020	0990_BIOAFA219_200707	Fish	Mullet (Planiliza ordensis)	ES2024793	<0.001	0.011	<0.001	-	0.011	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	07 Jul 2020	0990_BIOAFA241_200707	Fish	Bony Bream (Nematalosa erebi)	ES2024793	<0.002	0.02	<0.002	-	0.02	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.003	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002
BIO078	07 Jul 2020	0990_BIOAFA242_200707	Fish	Bony Bream (Nematalosa erebi)	ES2024793	<0.001	0.027	<0.001	-	0.029	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	07 Jul 2020	0990_BIOAFA243_200707	Fish	Bony Bream (Nematalosa erebi)	ES2024793	<0.001	0.022	<0.001	-	0.033	-	<0.001	<0.001	<0.001	-	<0.002	0.007	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	0.004	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	07 Jul 2020	0990_BIOAFA244_200707	Crustacean	Cherabin (Macrobrachium spinipes)	ES2024793	<0.002	0.013	0.002	-	0.031	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	0.016	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002
BIO078	07 Jul 2020	0990_BIOAFA245_200707	Crustacean	Cherabin (Macrobrachium spinipes)	ES2024793	<0.002	0.036	0.005	-	0.068	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	0.027	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002
BIO078	07 Jul 2020	0990_BIOAFA246_200707	Crustacean	Cherabin (Macrobrachium spinipes)	ES2024793	<0.002	0.013	<0.002	-	0.018	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	0.005	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002
BIO078	09 Nov 2020	0990_BIOAFA272_201109	Fish	Barramundi (Lates calcarifer)	ES2040601	<0.001	0.003	<0.001	-	0.003	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	09 Nov 2020	0990_BIOAFA273_201109	Fish	Barramundi (Lates calcarifer)	ES2040601	<0.002	<0.002	<0.002	-	<0.002	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002
BIO078	09 Nov 2020	0990_BIOAFA274_201109	Fish	Barramundi (Lates calcarifer)	ES2040601	<0.001	0.004	<0.001	-	0.004	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	09 Nov 2020	0990_BIOAFA275_201109	Fish	Blue Catfish (Neoarius graeffei)	ES2040601	<0.001	0.002	<0.001	-	0.002	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	09 Nov 2020	0990_BIOAFA276_201109	Fish	Blue Catfish (Neoarius graeffei)	ES2040601	<0.001	0.003	<0.001	-	0.003	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	09 Nov 2020	0990_BIOAFA278_201109	Fish	Blue Catfish (Neoarius graeffei)	ES2040601	<0.001	0.007	<0.001	-	0.007	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	09 Nov 2020	0990_BIOAFA279_201109	Fish	Blue Catfish (Neoarius graeffei)	ES2040601	<0.001	0.01	0.001	-	0.011	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	09 Nov 2020	0990_BIOAFA282_201109	Fish	Sleepy Cod (Oxyeleotris lineolata)	ES2040601	<0.001	0.002	<0.001	-	0.002	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	09 Nov 2020	0990_BIOAFA283_201109	Fish	Sleepy Cod (Oxyeleotris lineolata)	ES2040601	<0.001	0.003	<0.001	-	0.003	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	09 Nov 2020	0990_BIOAFA288_201109	Fish	Sooty Grunter/Black Bream (Hephaestus fuliginosus	ES2040601	<0.002	<0.002	<0.002	-	0.002	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	0.002
BIO078	09 Nov 2020	0990_BIOAFA289_201109	Fish	Butler's Grunter (Syncomistes butleri)	ES2040601	<0.001	0.007	<0.001	-	0.007	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	09 Nov 2020	0990_BIOAFA290_201109	Fish	Butler's Grunter (Syncomistes butleri)	ES2040601	<0.001	0.003	<0.001	-	0.003	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	09 Nov 2020	0990_BIOAFA291_201109	Fish	Bony Bream (Nematalosa erebi)	ES2040601	<0.001	0.012	0.001	-	0.012	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	09 Nov 2020	0990_BIOAFA292_201109	Fish	Bony Bream (Nematalosa erebi)	ES2040601	<0.001	0.008	<0.001	-	0.008	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	09 Nov 2020	0990_BIOAFA293_201109	Fish	Bony Bream (Nematalosa erebi)	ES2040601	<0.001	0.02	<0.001	-	0.02	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	09 Nov 2020	0990_BIOAFA296_201109	Crustacean	Cherabin (Macrobrachium spinipes)	ES2040601	<0.001	0.007	0.001	-	0.008	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001
BIO078	09 Nov 2020	0990_BIOAFA297_201109	Crustacean	Cherabin (Macrobrachium spinipes)	ES2040601	<0.001	0.003	<0.001	-	0.003	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.

Table T5
Current and Historical Biota Analytical Results
PFAS Ongoing Monitoring Plan
Deaprtment of Defence - RAAF Base Tindal

Table T5 - Current and Historical Biota Analytical Results

						PFAS (Full Suite)																															
						Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropentanesulfonic acid (PFPeS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoropropanesulfonic acid (PFPrS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR						0.0003	0.0003	0.0003	0.0005	0.0005	0.002	0.0005	0.0005	0.0005	0.001	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
		Department of Health 2019 2-6 years Crusaceans (invertebrate)				0.52	0.065	0.065	0.065																												
		Department of Health 2019 2-6 years Finfish (fish)				0.041	0.0052	0.0052	0.0052																												
Location Code	Date	Field ID	Fauna Group	Species	Lab Report Number																																
BIO078	28 Oct 2022	0990_BIOAFA439_221028	Crustacean	Cherabin (Macrobrachium spinipes)	ES2240149	<0.001	0.054	0.007	-	0.062	-	<0.001	<0.001	0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	28 Oct 2022	0990_BIOAFA440_221028	Crustacean	Cherabin (Macrobrachium spinipes)	ES2240149	<0.001	0.014	0.001	-	0.015	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	24 Oct 2023	0990_BIOAFA463_231024	Fish	Barramundi (Lates calcarifer)	ES2337465	<0.001	0.035	<0.001	-	0.035	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	24 Oct 2023	0990_BIOAFA464_231024	Fish	Barramundi (Lates calcarifer)	ES2337465	<0.001	0.043	<0.001	-	0.043	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	24 Oct 2023	0990_BIOAFA465_231024	Fish	Barramundi (Lates calcarifer)	ES2337465	<0.001	0.046	<0.001	-	0.046	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	24 Oct 2023	0990_BIOAFA466_231024	Fish	Barramundi (Lates calcarifer)	ES2337465	<0.001	0.046	<0.001	-	0.046	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	24 Oct 2023	0990_BIOAFA467_231024	Fish	Bony Bream (Nematalosa erebi)	ES2337465	<0.001	0.027	<0.001	-	0.027	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	24 Oct 2023	0990_BIOAFA468_231024	Fish	Bony Bream (Nematalosa erebi)	ES2337465	<0.001	0.073	<0.001	-	0.073	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	24 Oct 2023	0990_BIOAFA469_231024	Fish	Bony Bream (Nematalosa erebi)	ES2337465	<0.001	0.042	<0.001	-	0.042	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	24 Oct 2023	0990_BIOAFA470_231024	Fish	Butler's Grunter (Syncomistes butleri)	ES2337465	<0.001	0.1	<0.001	-	0.1	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	24 Oct 2023	0990_BIOAFA471_231024	Fish	Butler's Grunter (Syncomistes butleri)	ES2337465	<0.001	0.074	<0.001	-	0.074	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	24 Oct 2023	0990_BIOAFA472_231024	Fish	Butler's Grunter (Syncomistes butleri)	ES2337465	<0.001	0.128	<0.001	-	0.128	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	24 Oct 2023	0990_BIOAFA473_231024	Fish	Sleepy Cod (Oxyeleotris lineolata)	ES2337465	<0.001	0.05	<0.001	-	0.05	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	24 Oct 2023	0990_BIOAFA474_231024	Fish	Sleepy Cod (Oxyeleotris lineolata)	ES2337465	<0.001	0.092	<0.001	-	0.092	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	24 Oct 2023	0990_BIOAFA475_231024	Fish	Sleepy Cod (Oxyeleotris lineolata)	ES2337465	<0.001	0.114	<0.001	-	0.114	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	24 Oct 2023	0990_BIOAFA476_231024	Fish	Black Catfish (Neosilurus ater)	ES2337465	<0.001	0.174	<0.001	-	0.174	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	24 Oct 2023	0990_BIOAFA477_231024	Fish	Black Catfish (Neosilurus ater)	ES2337465	<0.001	0.086	0.001	-	0.087	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	24 Oct 2023	0990_BIOAFA478_231024	Fish	Mullet (Planiliza ordensis)	ES2337465	<0.001	0.144	<0.001	-	0.144	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	24 Oct 2023	0990_BIOAFA479_231024	Fish	Mullet (Planiliza ordensis)	ES2337465	<0.001	0.15	<0.001	-	0.15	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	24 Oct 2023	0990_BIOAFA480_231024	Fish	Mullet (Planiliza ordensis)	ES2337465	<0.001	0.134	<0.001	-	0.134	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	24 Oct 2023	0990_BIOAFA481_231024	Fish	Mullet (Planiliza ordensis)	ES2337465	<0.001	0.189	<0.001	-	0.189	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	24 Oct 2023	0990_BIOAFA482_231024	Crustacean	Cherabin (Macrobrachium spinipes)	ES2337465	<0.001	0.029	0.001	-	0.03	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	24 Oct 2023	0990_BIOAFA483_231024	Crustacean	Cherabin (Macrobrachium spinipes)	ES2337465	<0.001	0.016	0.001	-	0.017	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	24 Oct 2023	0990_BIOAFA484_231024	Crustacean	Cherabin (Macrobrachium spinipes)	ES2337465	<0.001	0.027	0.001	-	0.028	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA501_241016	Fish	Barramundi (Lates calcarifer)	ES2434947	<0.001	0.013	<0.001	0.013	0.013	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA502_241016	Fish	Barramundi (Lates calcarifer)	ES2434947	<0.001	0.011	<0.001	0.011	0.011	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA503_241016	Fish	Barramundi (Lates calcarifer)	ES2434947	<0.001	0.02	<0.001	0.02	0.02	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA504_241016	Fish	Barramundi (Lates calcarifer)	ES2434947	<0.001	0.024	<0.001	0.024	0.024	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA505_241016	Fish	Sooty Grunter / Black Bream (Hephaestus fuliginosus)	ES2434947	<0.001	0.016	<0.001	0.016	0.016	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA506_241016	Fish	Sooty Grunter / Black Bream (Hephaestus fuliginosus)	ES2434947	<0.001	0.022	<0.001	0.022	0.022	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA507_241016	Fish	Sooty Grunter / Black Bream (Hephaestus fuliginosus)	ES2434947	<0.001	0.025	<0.001	0.025	0.025	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA508_241016	Fish	Mullet (Planiliza ordensis)	ES2434947	<0.001	0.083	<0.001	0.083	0.083	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA509_241016	Fish	Bony Bream (Nematalosa erebi)	ES2434947	<0.001	0.041	<0.001	0.041	0.041	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA510_241016	Fish	Bony Bream (Nematalosa erebi)	ES2434947	<0.001	0.066	<0.001	0.066	0.066	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA511_241016	Fish	Bony Bream (Nematalosa erebi)	ES2434947	<0.001	0.039	<0.001	0.039	0.039	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA512_241016	Fish	Sleepy Cod (Oxyeleotris lineolata)	ES2434947	<0.001	0.024	<0.001	0.024	0.024	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA513_241016	Fish	Sleepy Cod (Oxyeleotris lineolata)	ES2434947	<0.001	0.039	<0.001	0.039	0.039	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA514_241016	Fish	Sleepy Cod (Oxyeleotris lineolata)	ES2434947	<0.001	0.063	<0.001	0.063	0.063	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA515_241016	Fish	Blue Catfish (Neoarius graeffei)	ES2434947	<0.001	0.024	<0.001	0.024	0.024	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA516_241016	Fish	Berney's Catfish (Neoarius berneyi)	ES2434947	<0.001	0.035	<0.001	0.035	0.035	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA517_241016	Fish	Berney's Catfish (Neoarius berneyi)	ES2434947	<0.001	0.025	<0.001	0.025	0.025	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA518_241016	Fish	Berney's Catfish (Neoarius berneyi)	ES2434947	<0.001	0.094	0.002	0.096	0.096	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA519_241016	Fish	Black Catfish (Neosilurus ater)	ES2434947	<0.001	0.081	0.003	0.084	0.084	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA520_241016	Fish	Black Catfish (Neosilurus ater)	ES2434947	<0.001	0.092	0.002	0.094	0.094	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA521_241016	Fish	Black Catfish (Neosilurus ater)	ES2434947	<0.001	0.056	0.002	0.058	0.058	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA522_241016	Crustacean	Cherabin (Macrobrachium spinipes)	ES2434947	<0.001	0.014	0.001	0.015	0.015	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA523_241016	Crustacean	Cherabin (Macrobrachium spinipes)	ES2434947	<0.001	0.015	0.001	0.016	0.016	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO078	16 Oct 2024	0990_BIOAFA524_241016	Crustacean	Cherabin (Macrobrachium spinipes)	ES2434947	<0.001	0.023	0.002	0.025	0.025	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	26 Sep 2017	0990_FH187_170926	Fish	Barramundi fillet	568693	<0.0005	0.022	<0.0003	0.022	0.022	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO088	26 Sep 2017	0990_FH188_170926	Fish	Barramundi fillet	568693	<0.0005	0.021	<0.0003	0.021	0.021	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO088	26 Sep 2017	0990_FH191_170926	Fish	Barramundi fillet	568693	<0.0005	0.014	<0.0003	0.014	0.014	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO088	26 Sep 2017	0990_FH193_170926	Fish	Barramundi fillet	568693	<0.0005	0.042	<0.0003	0.042	0.043	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0010	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO088	26 Sep 2017	0990_FH197_170926	Fish	Butler's Grunter whole	568693	<0.0005	0.012	<0.0003	0.012	0.012	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO088	26 Sep 2017	0990_FH199_170926	Fish	Barramundi fillet	568693	<0.0005	0.017	<0.0003	0.017	0.017	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO088	26 Sep 2017	0990_FH202_170926	Fish	Blue Catfish fillet	568693	<0.0005	0.0092	<0.0003	0.0092	0.0092	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
BIO088	26 Sep 2017	0990_FH203_170926	Fish	Blue Catfish fillet	568693	<0.0005	0.0062	<0.0003	0.0062	0.0062	-	<0.0005	<0.0005	<0.0

Table T5
Current and Historical Biota Analytical Results
PFAS Ongoing Monitoring Plan
Deaprtment of Defence - RAAF Base Tindal

Table T5 - Current and Historical Biota Analytical Results

						PFAS (Full Suite)																															
						Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropentanesulfonic acid (PFPeS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoropentanesulfonic acid (PFPeS)	Perfluorooctanesulfonic acid (PFOS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR						0.0003	0.0003	0.0003	0.0005	0.0005	0.002	0.0005	0.0005	0.0005	0.001	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
		Department of Health 2019 2-6 years Crusaceans (invertebrate)				0.52	0.065	0.065	0.065																												
		Department of Health 2019 2-6 years Finfish (fish)				0.041	0.0052	0.0052	0.0052																												
Location Code	Date	Field ID	Fauna Group	Species	Lab Report Number																																
BIO088	18 Nov 2019	0990_BIOAFA158_191118	Fish	Blue Catfish (Neoarius graeffei)	ES1938861	<0.001	0.038	0.002	-	0.045	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	0.005	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	18 Nov 2019	0990_BIOAFA163_191118	Fish	Giant Gudgeon (Oxyeleotris selheimi)	ES1938861	<0.001	0.032	<0.001	-	0.04	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	0.008	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	18 Nov 2019	0990_BIOAFA164_191118	Fish	Butler's Grunter (Syncomistes butleri)	ES1938861	<0.001	0.016	<0.001	-	0.02	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	0.004	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	18 Nov 2019	0990_BIOAFA165_191118	Fish	Tarpon (Megalops cyprinoides)	ES1938861	<0.001	0.023	<0.001	-	0.026	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	18 Nov 2019	0990_BIOAFA166_191118	Fish	Tarpon (Megalops cyprinoides)	ES1938861	<0.001	0.062	0.001	-	0.069	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	0.006	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	18 Nov 2019	0990_BIOAFA167_191118	Fish	Mullet (Planiliza ordensis)	ES1938861	<0.001	0.01	<0.001	-	0.02	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	0.01	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	18 Nov 2019	0990_BIOAFA168_191118	Fish	Mullet (Planiliza ordensis)	ES1938861	<0.001	0.064	<0.001	-	0.066	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	18 Nov 2019	0990_BIOAFA169_191118	Fish	Bony Bream (Nematalosa erebi)	ES1938861	<0.001	0.053	<0.001	-	0.056	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	18 Nov 2019	0990_BIOAFA170_191118	Fish	Bony Bream (Nematalosa erebi)	ES1938861	<0.001	0.04	<0.001	-	0.04	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	18 Nov 2019	0990_BIOAFA171_191118	Fish	Bony Bream (Nematalosa erebi)	ES1938861	<0.001	0.019	<0.001	-	0.019	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	18 Nov 2019	0990_BIOAFA173_191118	Crustacean	Cherabin (Macrobrachium spinipes)	ES1938861	<0.001	0.012	<0.001	-	0.012	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	18 Nov 2019	0990_BIOAFA176_191118	Reptile - Reptile - turtle	Northern Red-faced Reptile - turtle (Emydura victoriae)	ES1938861	<0.001	0.078	0.001	-	0.095	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	0.016	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	18 Nov 2019	0990_BIOAFA177_191118	Reptile - Reptile - turtle	Northern Red-faced Reptile - turtle (Emydura victoriae)	ES1938861	<0.001	0.54	0.002	-	0.555	-	<0.001	<0.001	0.002	-	<0.002	0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	0.006	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	18 Nov 2019	0990_BIOAFA178_191118	Reptile - Reptile - turtle	Northern Red-faced Reptile - turtle (Emydura victoriae)	ES1938861	<0.001	0.054	<0.001	-	0.057	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	0.003	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	18 Nov 2019	0990_BIOAFA179_191118	Reptile - Reptile - turtle	Northern Red-faced Reptile - turtle (Emydura victoriae)	ES1938861	<0.001	0.301	<0.001	-	0.301	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	08 Jul 2020	0990_BIOAFA247_200708	Fish	Barramundi (Lates calcarifer)	ES2024793	<0.002	0.006	<0.002	-	0.035	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	0.027	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
BIO088	08 Jul 2020	0990_BIOAFA248_200708	Fish	Barramundi (Lates calcarifer)	ES2024793	<0.001	0.017	<0.001	-	0.038	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	0.021	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	08 Jul 2020	0990_BIOAFA249_200708	Fish	Barramundi (Lates calcarifer)	ES2024793	<0.001	0.026	<0.001	-	0.038	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	0.012	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	08 Jul 2020	0990_BIOAFA250_200708	Fish	Mullet (Planiliza ordensis)	ES2024793	<0.001	0.031	<0.001	-	0.037	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	0.006	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	08 Jul 2020	0990_BIOAFA251_200708	Fish	Mullet (Planiliza ordensis)	ES2024793	<0.002	0.022	<0.002	-	0.026	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	0.004	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
BIO088	08 Jul 2020	0990_BIOAFA252_200708	Fish	Mullet (Planiliza ordensis)	ES2024793	<0.001	0.014	<0.001	-	0.025	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	0.011	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	08 Jul 2020	0990_BIOAFA259_200708	Fish	Bony Bream (Nematalosa erebi)	ES2024793	<0.001	0.017	<0.001	-	0.025	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	0.008	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	08 Jul 2020	0990_BIOAFA260_200708	Fish	Bony Bream (Nematalosa erebi)	ES2024793	<0.001	0.015	<0.001	-	0.029	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	0.014	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	08 Jul 2020	0990_BIOAFA261_200708	Fish	Bony Bream (Nematalosa erebi)	ES2024793	<0.001	0.016	<0.001	-	0.016	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	08 Jul 2020	0990_BIOAFA262_200708	Crustacean	Cherabin (Macrobrachium spinipes)	ES2024793	<0.001	0.045	0.005	-	0.05	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	08 Jul 2020	0990_BIOAFA263_200708	Crustacean	Cherabin (Macrobrachium spinipes)	ES2024793	<0.001	0.032	0.004	-	0.052	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	0.016	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	08 Jul 2020	0990_BIOAFA264_200708	Crustacean	Cherabin (Macrobrachium spinipes)	ES2024793	<0.001	0.022	0.003	-	0.037	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	0.012	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	10 Nov 2020	0990_BIOAFA305_201110	Fish	Barramundi (Lates calcarifer)	ES2040601	<0.002	0.012	<0.002	-	0.012	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
BIO088	10 Nov 2020	0990_BIOAFA306_201110	Fish	Barramundi (Lates calcarifer)	ES2040601	<0.002	0.044	<0.002	-	0.044	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
BIO088	10 Nov 2020	0990_BIOAFA307_201110	Fish	Barramundi (Lates calcarifer)	ES2040601	<0.002	0.022	<0.002	-	0.022	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
BIO088	10 Nov 2020	0990_BIOAFA309_201110	Fish	Blue Catfish (Neoarius graeffei)	ES2040601	<0.002	0.047	<0.002	-	0.047	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
BIO088	10 Nov 2020	0990_BIOAFA310_201110	Fish	Blue Catfish (Neoarius graeffei)	ES2040601	<0.002	0.16	<0.002	-	0.16	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
BIO088	10 Nov 2020	0990_BIOAFA313_201110	Fish	Black Catfish (Neosilurus ater)	ES2040601	<0.002	0.038	<0.002	-	0.038	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
BIO088	10 Nov 2020	0990_BIOAFA314_201110	Fish	Black Catfish (Neosilurus ater)	ES2040601	<0.002	0.123	<0.002	-	0.123	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
BIO088	10 Nov 2020	0990_BIOAFA316_201110	Fish	Butler's Grunter (Syncomistes butleri)	ES2040601	<0.002	0.031	<0.002	-	0.031	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
BIO088	10 Nov 2020	0990_BIOAFA317_201110	Fish	Butler's Grunter (Syncomistes butleri)	ES2040601	<0.002	0.025	<0.002	-	0.025	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
BIO088	10 Nov 2020	0990_BIOAFA320_201110	Fish	Bony Bream (Nematalosa erebi)	ES2040601	<0.002	0.045	<0.002	-	0.045	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
BIO088	10 Nov 2020	0990_BIOAFA321_201110	Fish	Bony Bream (Nematalosa erebi)	ES2040601	<0.002	0.029	<0.002	-	0.029	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
BIO088	10 Nov 2020	0990_BIOAFA322_201110	Fish	Bony Bream (Nematalosa erebi)	ES2040601	<0.002	0.032	<0.002	-	0.035	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
BIO088	10 Nov 2020	0990_BIOAFA324_201110	Fish	Sleepy Cod (Oxyeleotris lineolata)	ES2040601	<0.002	0.012	<0.002	-	0.012	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
BIO088	10 Nov 2020	0990_BIOAFA325_201110	Fish	Sleepy Cod (Oxyeleotris lineolata)	ES2040601	<0.002	0.019	<0.002	-	0.019	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
BIO088	10 Nov 2020	0990_BIOAFA327_201110	Crustacean	Cherabin (Macrobrachium spinipes)	ES2040601	<0.002	0.091	0.003	-	0.094	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
BIO088	10 Nov 2020	0990_BIOAFA328_201110	Crustacean	Cherabin (Macrobrachium spinipes)	ES2040601	<0.002	0.074	0.004	-	0.078	-	<0.002	<0.002	<0.002	-	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.002	<0.005	<0.005	<0.002	<0.005
BIO088	10 Nov 2020	0990_BIOAFA329_201110	Crustacean	Cherabin (Macrobrachium spinipes)	ES2040601	<0.001	0.038	0.003	-	0.041	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	10 Nov 2020	0990_BIOAFA330_201110	Reptile - Reptile - turtle	Northern Red-faced Reptile - turtle (Emydura victoriae)	ES2040601	<0.001	0.023	<0.001	-	0.023	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	10 Nov 2020	0990_BIOAFA331_201110	Reptile - Reptile - turtle	Northern Red-faced Reptile - turtle (Emydura victoriae)	ES2040601	<0.001	0.192	0.001	-	0.198	-	<0.001	<0.001	0.002	-	<0.002	<0.005	<0.002	0.003	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	10 Nov 2020	0990_BIOAFA332_201110	Reptile - Reptile - turtle	Northern Red-faced Reptile - turtle (Emydura victoriae)	ES2040601	<0.001	0.056	<0.001	-	0.056	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	10 Nov 2020	0990_BIOAFA333_201110	Reptile - Reptile - turtle	Northern Red-faced Reptile - turtle (Emydura victoriae)	ES2040601	<0.001	0.108	<0.001	-	0.108	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	10 Nov 2020	0990_BIOAFA334_201110	Reptile - Reptile - turtle	Northern Red-faced Reptile - turtle (Emydura victoriae)	ES2040601	<0.001	0.119	<0.001	-	0.12	-	<0.001	<0.001	0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	10 Nov 2020	0990_BIOAFA335_201110	Reptile - Reptile - turtle	Northern Red-faced Reptile - turtle (Emydura victoriae)	ES2040601	<0.001	0.706	0.004	-	0.714	-	<0.001	<0.001	0.004	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	02 Jun 2021	0990_BIOAFA360_210602	Fish	Barramundi (Lates calcarifer)	ES2121388	<0.001	0.004	<0.001	-	0.004	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	02 Jun 2021	0990_BIOAFA361_210602	Fish	Barramundi (Lates calcarifer)	ES2121388	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	02 Jun 2021	0990_BIOAFA362_210602	Fish	Barramundi (Lates calcarifer)	ES2121388	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	02 Jun 2021	0990_BIOAFA363_210602	Fish	Black Catfish (Neosilurus ater)	ES2121388	<0.001	0.005	<0.001	-	0.005	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	02 Jun 2021	0990_BIOAFA364_210602	Fish	Black Catfish (Neosilurus ater)	ES2121388	<0.001	0.003	<0.001	-	0.003	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	02 Jun 2021	0990_BIOAFA365_210602	Fish	Black Catfish (Neosilurus ater)	ES2121388	<0.001	0.006	<0.001	-	0.006	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	02 Jun 2021	0990_BIOAFA366_210602	Fish	Blue Catfish (Neoarius graeffei)	ES2121388	<0.001	0.004	<0.001	-	0.004	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	02 Jun 2021	0990_BIOAFA367_210602	Fish	Blue Catfish (Neoarius graeffei)	ES2121388	<0.001	0.018	<0.001	-	0.018	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001

Table T5 - Current and Historical Biota Analytical Results

						PFAS (Full Suite)																															
						Perfluorooctanoic acid (PFOA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFHxS and PFOS	Sum of PFAS	Perfluoropentanesulfonic acid (PFPeS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoropentanesulfonic acid (PFPeS)	Perfluorotetrane sulfonic acid (PFDS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR						0.0003	0.0003	0.0003	0.0005	0.0005	0.002	0.0005	0.0005	0.0005	0.001	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
	Department of Health 2019 2-6 years Crusaceans (invertebrate)					**0.52**	**0.065**	**0.065**	**0.065**																												
	Department of Health 2019 2-6 years Finfish (fish)					**0.041**	**0.0052**	**0.0052**	**0.0052**																												
Location Code	Date	Field ID	Fauna Group	Species	Lab Report Number																																
BIO088	23 Oct 2023	0990_BIOAFA451_231023	Fish	Sooty Grunter / Black Bream (Hephaestus fuliginosus)	ES2337465	<0.001	**0.042**	<0.001	-	**0.042**	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	23 Oct 2023	0990_BIOAFA452_231023	Fish	Butler's Grunter (Syncomistes butleri)	ES2337465	<0.001	**0.074**	<0.001	-	**0.074**	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	23 Oct 2023	0990_BIOAFA453_231023	Fish	Butler's Grunter (Syncomistes butleri)	ES2337465	<0.001	**0.027**	<0.001	-	**0.027**	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	23 Oct 2023	0990_BIOAFA454_231023	Fish	Black Catfish (Neosilurus ater)	ES2337465	<0.001	**0.11**	<0.001	-	**0.11**	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	23 Oct 2023	0990_BIOAFA455_231023	Fish	Berney's Catfish (Neoarius berneyi)	ES2337465	<0.001	**0.042**	<0.001	-	**0.042**	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	23 Oct 2023	0990_BIOAFA456_231023	Fish	Berney's Catfish (Neoarius berneyi)	ES2337465	<0.001	**0.082**	<0.001	-	**0.082**	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	23 Oct 2023	0990_BIOAFA457_231023	Fish	Mullet (Planiliza ordensis)	ES2337465	<0.001	**0.07**	<0.001	-	**0.07**	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	23 Oct 2023	0990_BIOAFA458_231023	Fish	Mullet (Planiliza ordensis)	ES2337465	<0.001	**0.066**	<0.001	-	**0.066**	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	23 Oct 2023	0990_BIOAFA459_231023	Fish	Mullet (Planiliza ordensis)	ES2337465	<0.001	**0.142**	<0.001	-	**0.142**	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	23 Oct 2023	0990_BIOAFA460_231023	Crustacean	Cherabin (Macrobrachium spinipes)	ES2337465	<0.001	**0.07**	**0.003**	-	**0.073**	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	23 Oct 2023	0990_BIOAFA461_231023	Crustacean	Cherabin (Macrobrachium spinipes)	ES2337465	<0.001	**0.013**	<0.001	-	**0.013**	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	23 Oct 2023	0990_BIOAFA462_231023	Crustacean	Cherabin (Macrobrachium spinipes)	ES2337465	<0.001	**0.109**	<0.001	-	**0.109**	-	<0.001	<0.001	<0.001	-	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	15 Oct 2024	0990_BIOAFA485_241015	Fish	Barramundi (Lates calcarifer)	ES2434947	<0.001	**0.015**	<0.001	**0.015**	**0.015**	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	15 Oct 2024	0990_BIOAFA486_241015	Fish	Barramundi (Lates calcarifer)	ES2434947	<0.001	**0.011**	<0.001	**0.011**	**0.011**	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	15 Oct 2024	0990_BIOAFA487_241015	Fish	Barramundi (Lates calcarifer)	ES2434947	<0.001	**0.024**	<0.001	**0.024**	**0.024**	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	15 Oct 2024	0990_BIOAFA488_241015	Fish	Barramundi (Lates calcarifer)	ES2434947	<0.001	**0.032**	<0.001	**0.032**	**0.032**	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	15 Oct 2024	0990_BIOAFA489_241015	Fish	Sooty Grunter / Black Bream (Hephaestus fuliginosus)	ES2434947	<0.001	**0.008**	<0.001	**0.008**	**0.008**	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	15 Oct 2024	0990_BIOAFA490_241015	Fish	Sooty Grunter / Black Bream (Hephaestus fuliginosus)	ES2434947	<0.001	**0.017**	<0.001	**0.017**	**0.017**	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	15 Oct 2024	0990_BIOAFA491_241015	Fish	Sooty Grunter / Black Bream (Hephaestus fuliginosus)	ES2434947	<0.001	**0.004**	<0.001	**0.004**	**0.004**	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	15 Oct 2024	0990_BIOAFA492_241015	Fish	Mullet (Planiliza ordensis)	ES2434947	<0.001	**0.103**	<0.001	**0.103**	**0.103**	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	15 Oct 2024	0990_BIOAFA493_241015	Fish	Mullet (Planiliza ordensis)	ES2434947	<0.001	**0.081**	<0.001	**0.081**	**0.081**	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	15 Oct 2024	0990_BIOAFA494_241015	Fish	Sleepy Cod (Oxyeleotris lineolata)	ES2434947	<0.001	**0.015**	<0.001	**0.015**	**0.015**	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	15 Oct 2024	0990_BIOAFA495_241015	Fish	Bony Bream (Nematalosa erebi)	ES2434947	<0.001	**0.027**	<0.001	**0.027**	**0.027**	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	15 Oct 2024	0990_BIOAFA496_241015	Fish	Bony Bream (Nematalosa erebi)	ES2434947	<0.001	**0.028**	<0.001	**0.028**	**0.028**	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	15 Oct 2024	0990_BIOAFA497_241015	Fish	Bony Bream (Nematalosa erebi)	ES2434947	<0.001	**0.03**	<0.001	**0.03**	**0.03**	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	15 Oct 2024	0990_BIOAFA498_241015	Crustacean	Cherabin (Macrobrachium spinipes)	ES2434947	<0.001	**0.011**	<0.001	**0.011**	**0.011**	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	15 Oct 2024	0990_BIOAFA499_241015	Crustacean	Cherabin (Macrobrachium spinipes)	ES2434947	<0.001	**0.018**	<0.001	**0.018**	**0.018**	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002
BIO088	15 Oct 2024	0990_BIOAFA500_241015	Crustacean	Cherabin (Macrobrachium spinipes)	ES2434947	<0.001	**0.041**	**0.001**	**0.042**	**0.042**	<0.002	<0.001	<0.001	<0.001	<0.001	<0.002	<0.005	<0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.005	<0.001	<0.002	<0.002	<0.001	<0.002

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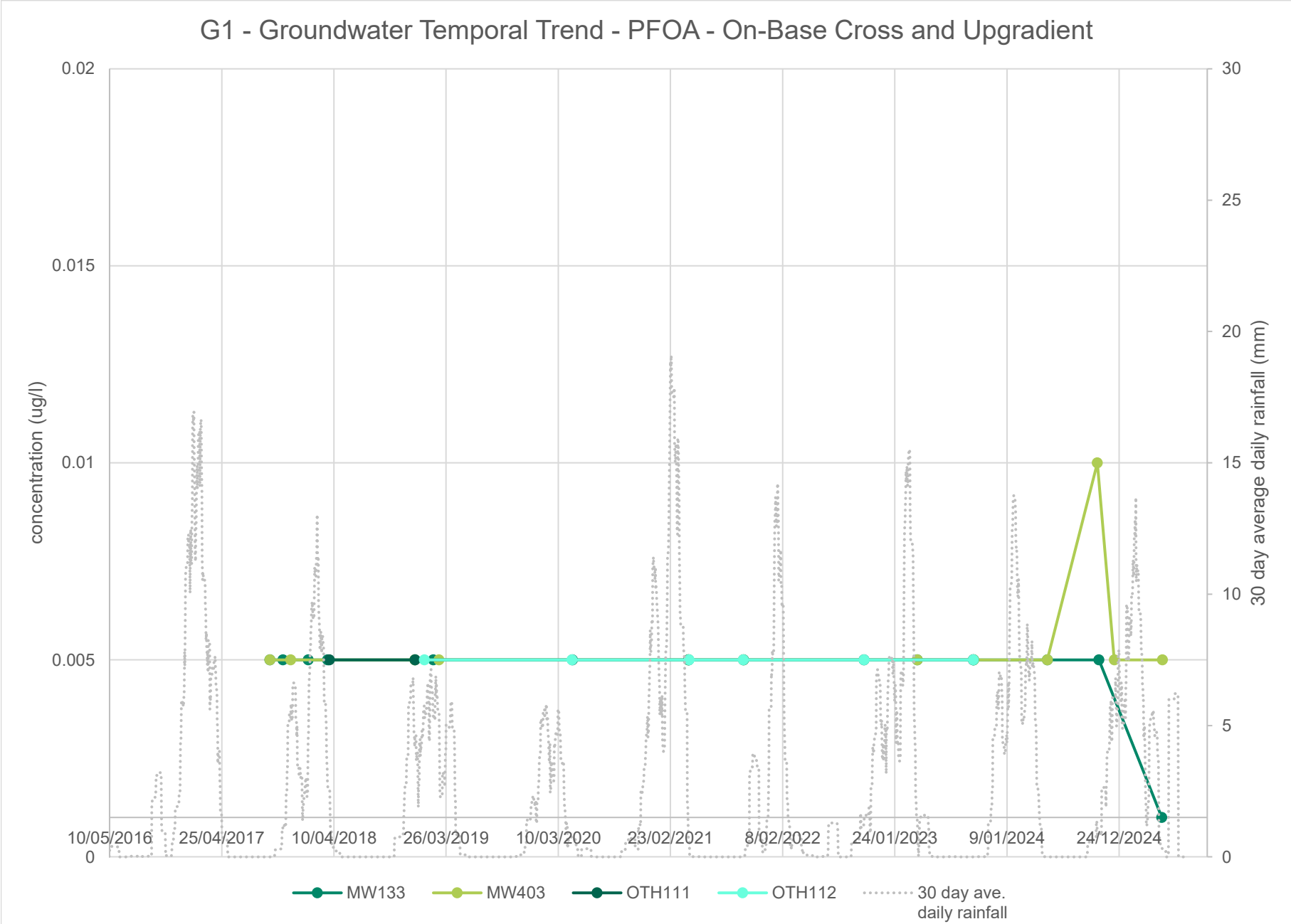
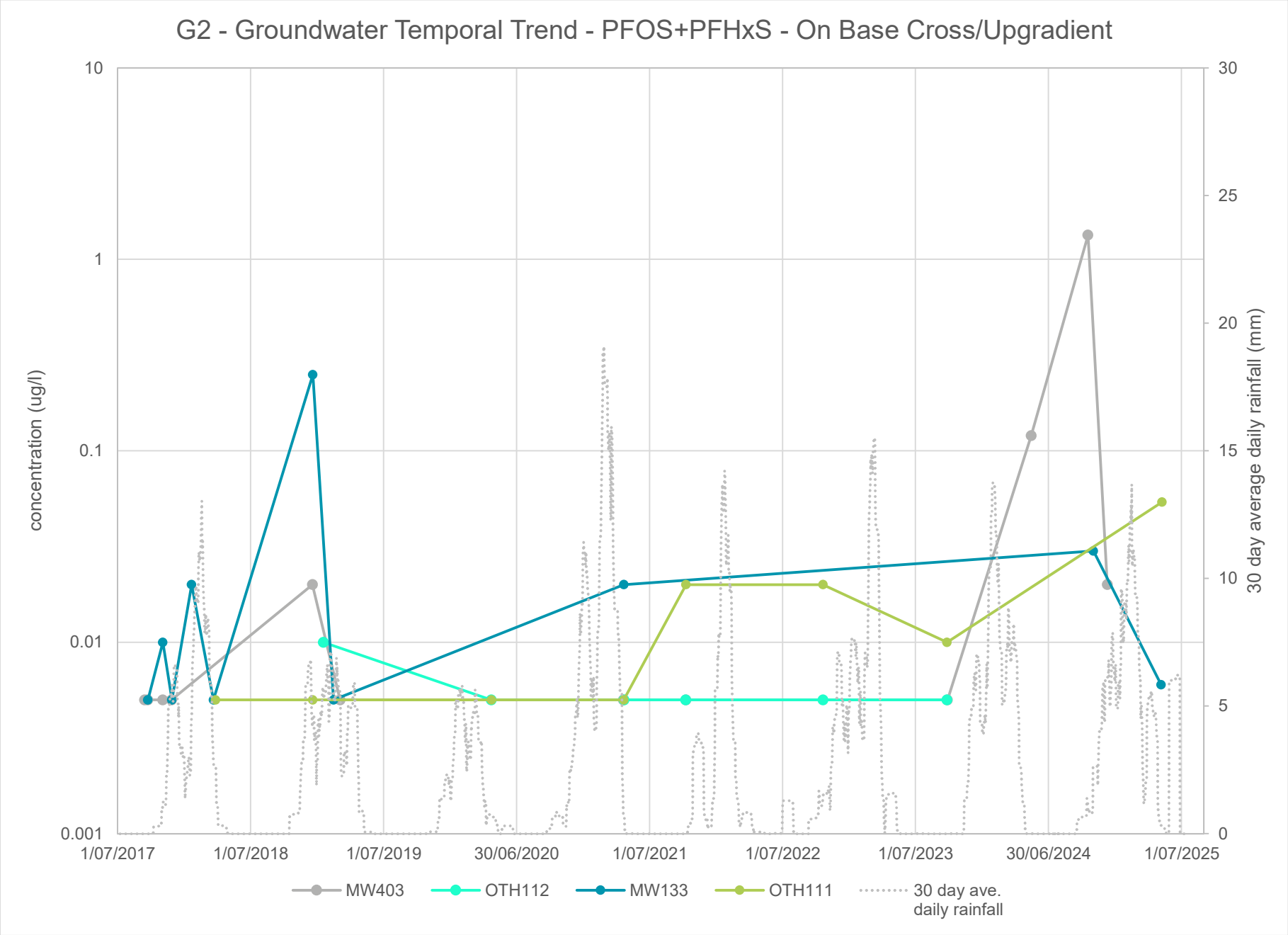
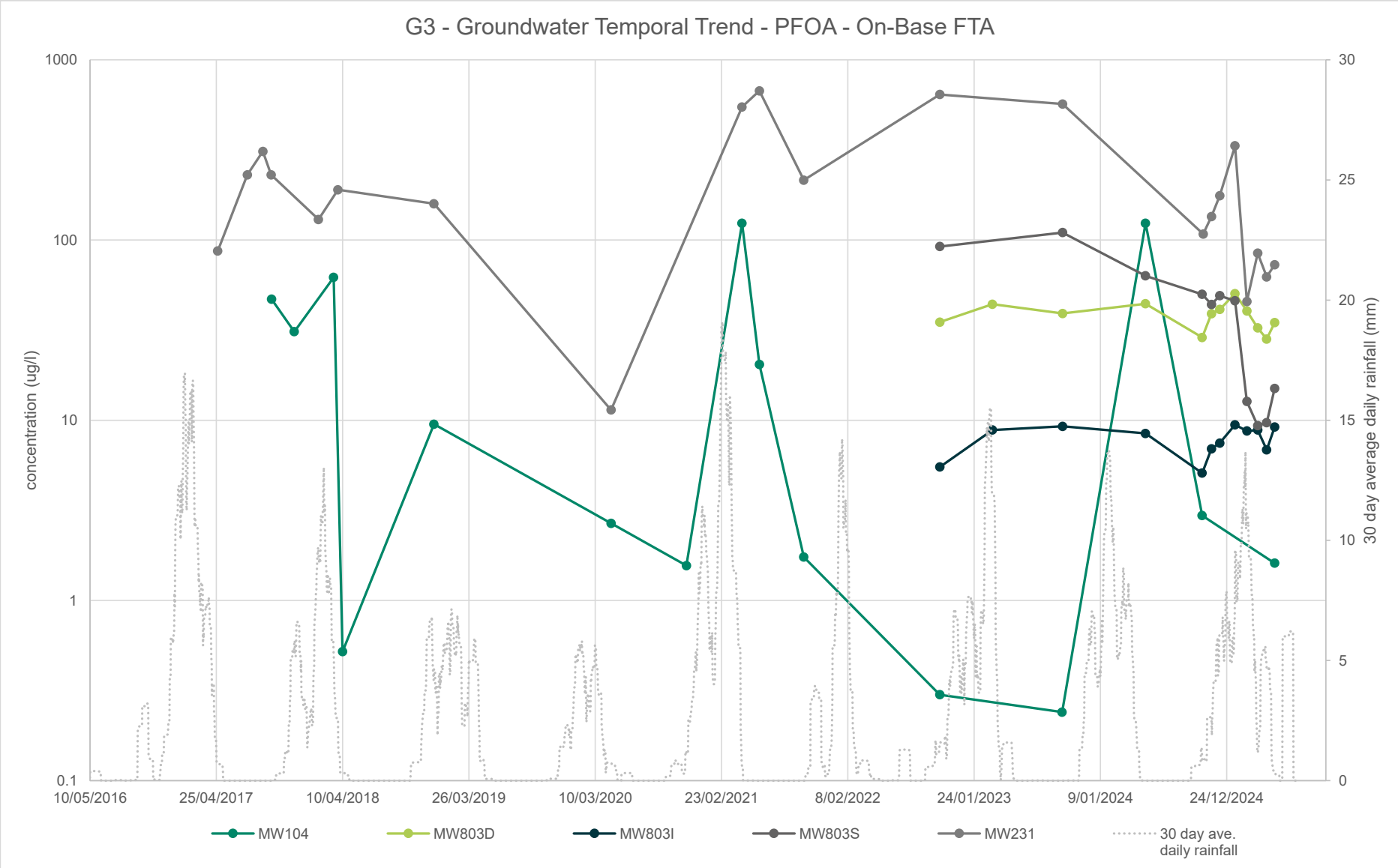
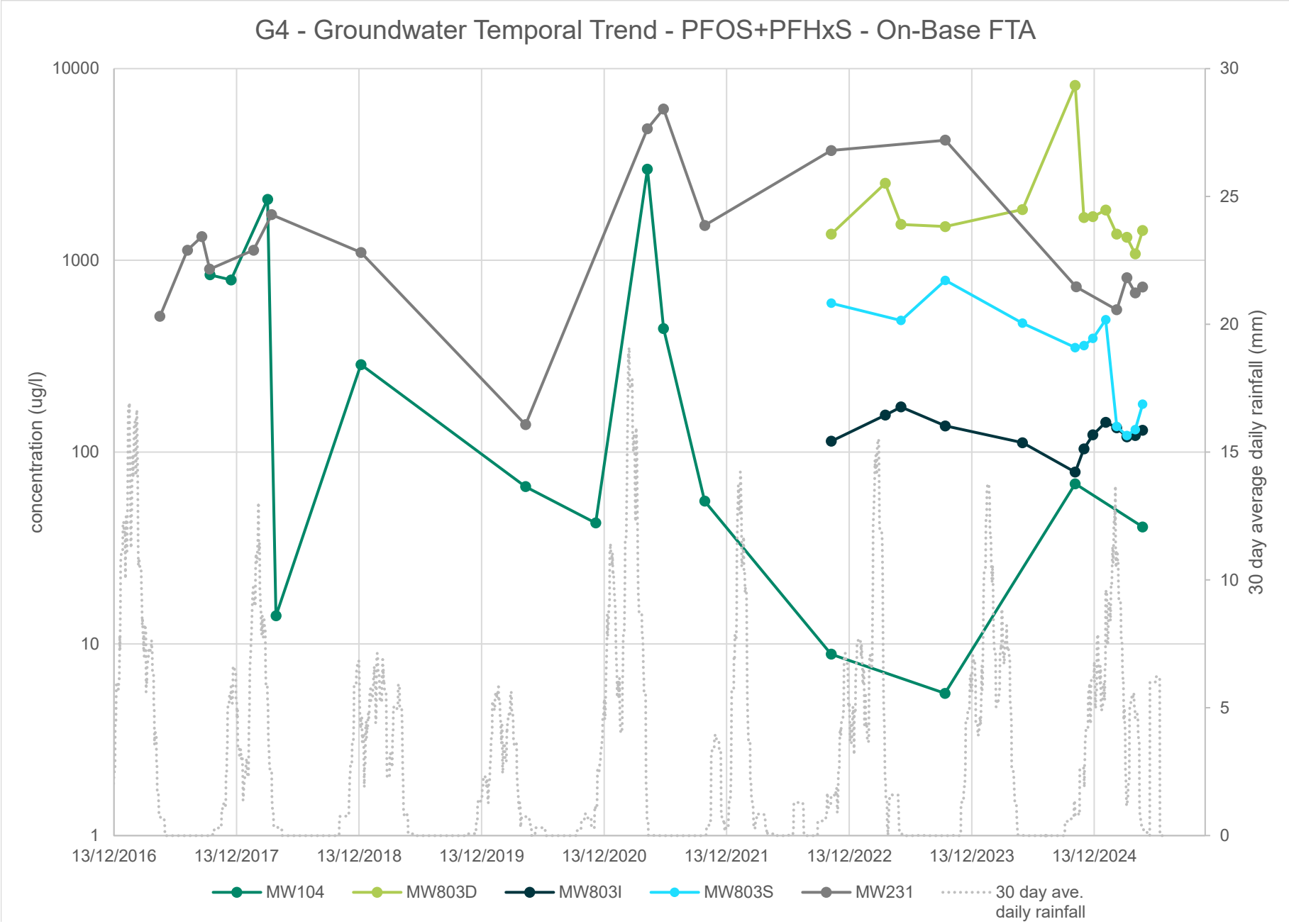
Appendix D

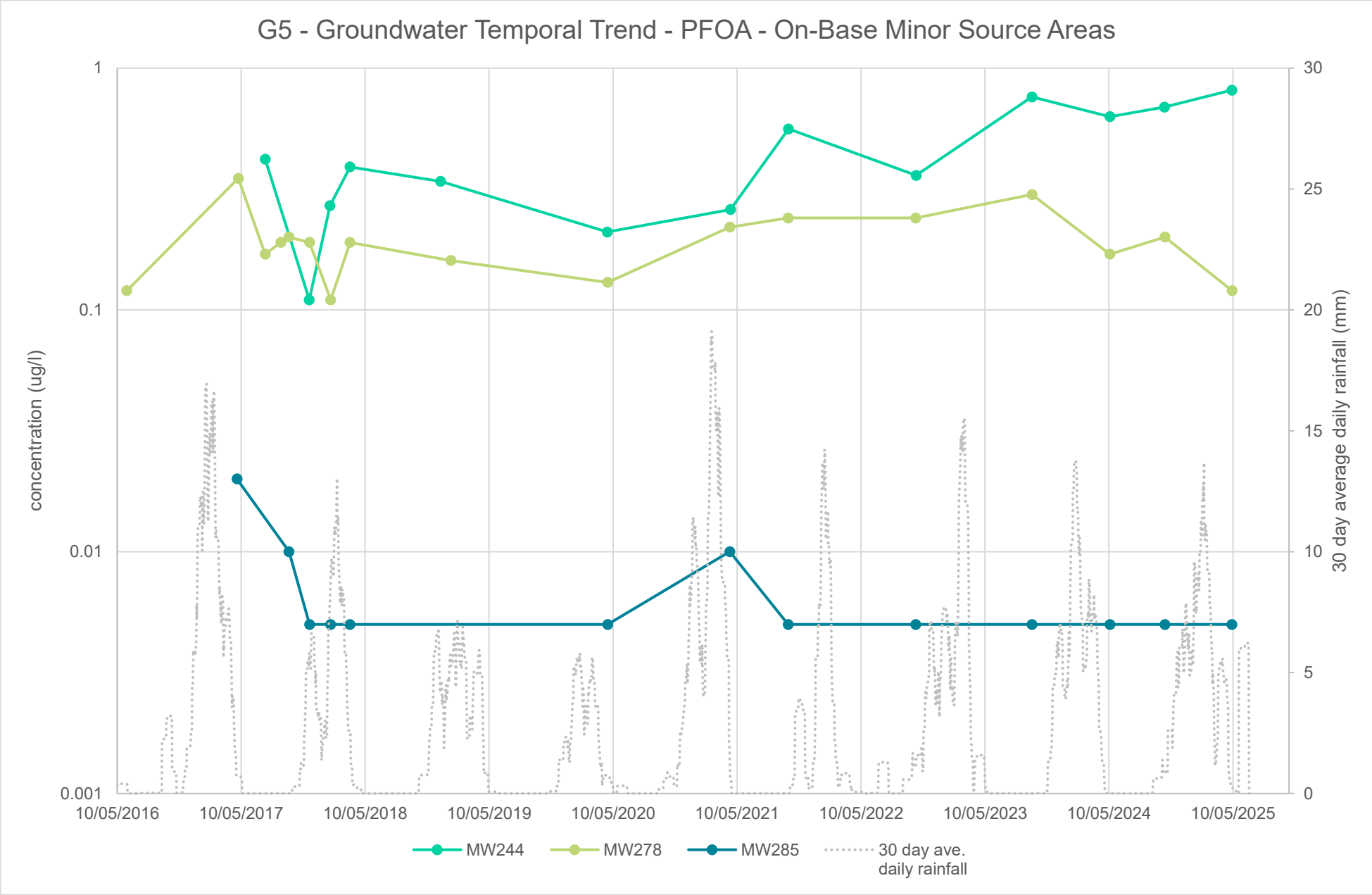
Graphs

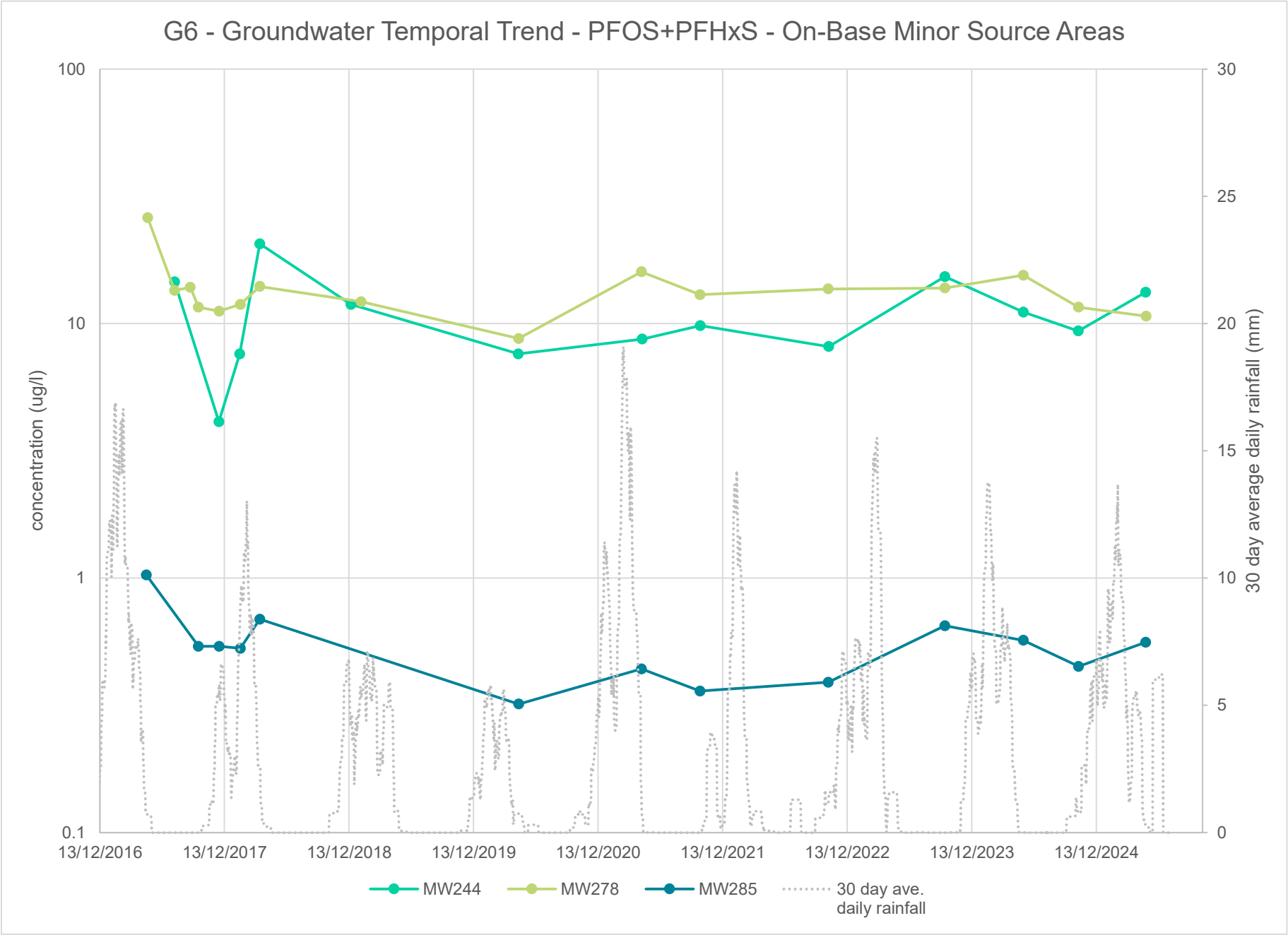

G1 - Groundwater Temporal Trend - PFOA - On-Base Cross and Upgradient
concentration (ug/l)
30 day average daily rainfall (mm)
0.02
0.015
0.01
0.005
0
30
25
20
15
10
5
0
10/05/2016
25/04/2017
10/04/2018
26/03/2019
10/03/2020
23/02/2021
8/02/2022
24/01/2023
9/01/2024
24/12/2024
MW133
MW403
OTH111
OTH112
30 day ave. daily rainfall

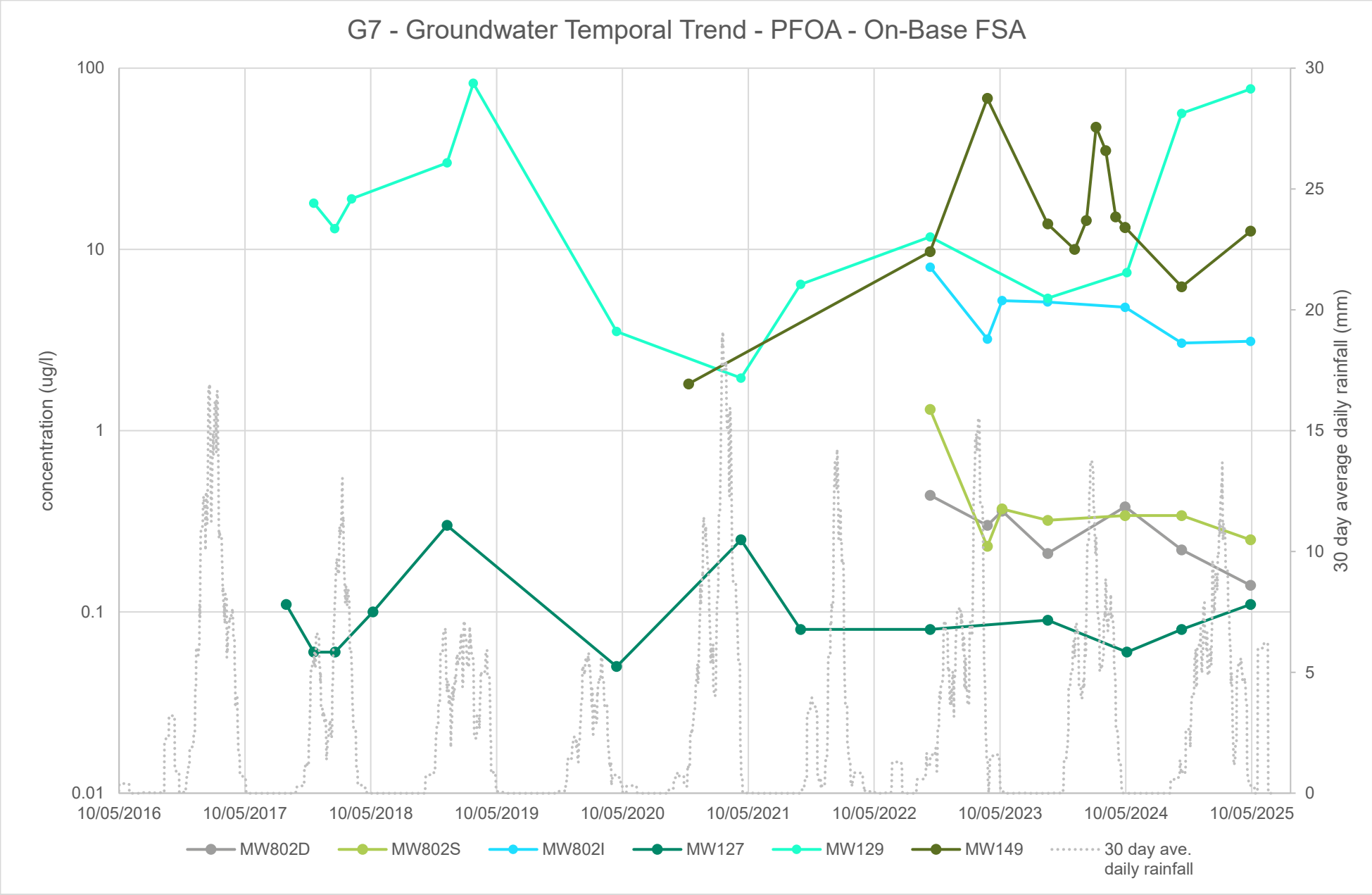

G2 - Groundwater Temporal Trend - PFOS+PFHxS - On Base Cross/Upgradient
concentration (ug/l)
10
1
0.1
0.01
0.001
30 day average daily rainfall (mm)
30
25
20
15
10
5
0
1/07/2017
1/07/2018
1/07/2019
30/06/2020
1/07/2021
1/07/2022
1/07/2023
30/06/2024
1/07/2025
MW403
OTH112
MW133
OTH111
30 day ave. daily rainfall

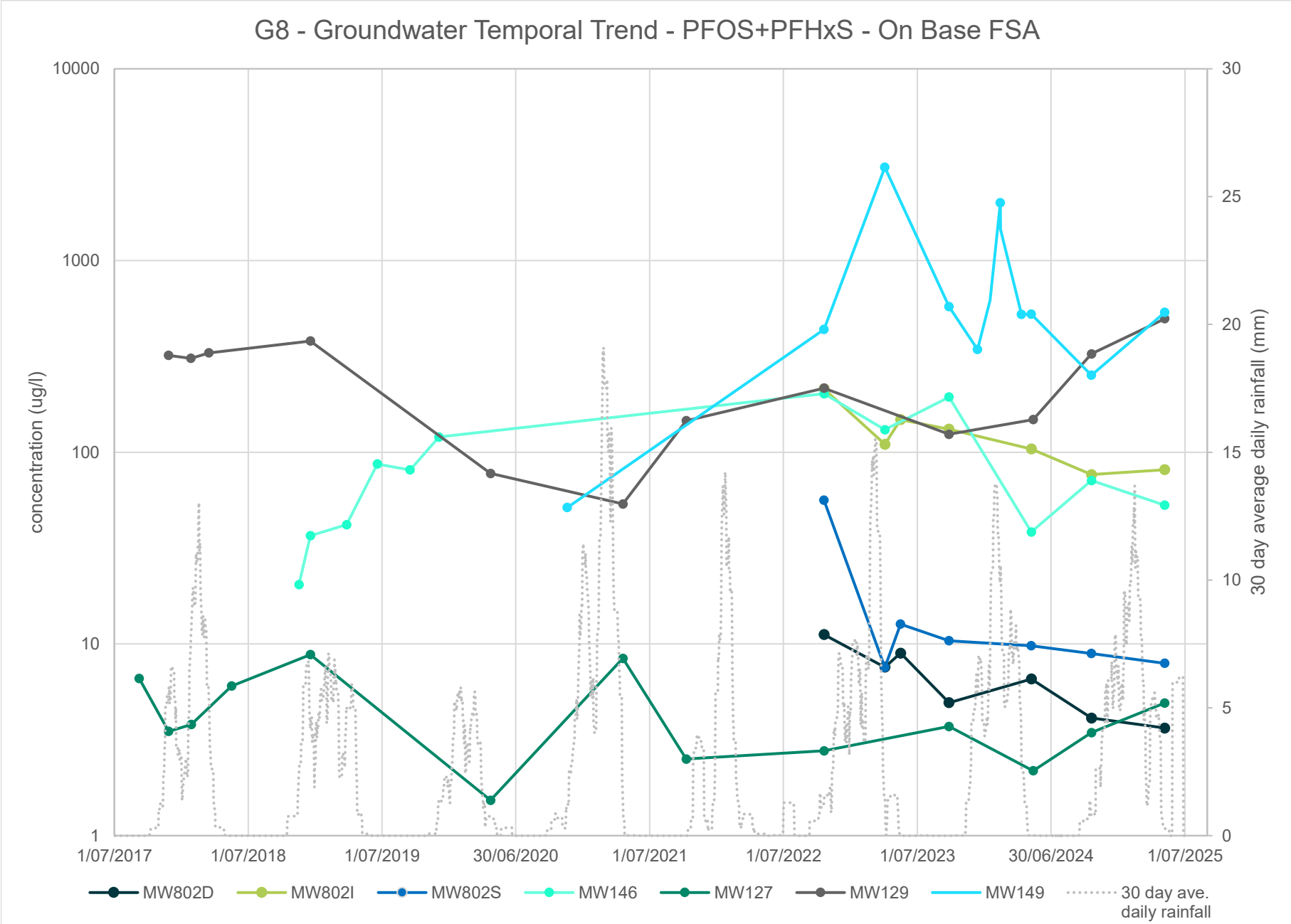

G3 - Groundwater Temporal Trend - PFOA - On-Base FTA
concentration (ug/l)
1000
100
10
1
0.1
30 day average daily rainfall (mm)
30
25
20
15
10
5
0
10/05/2016
25/04/2017
10/04/2018
26/03/2019
10/03/2020
23/02/2021
8/02/2022
24/01/2023
9/01/2024
24/12/2024
MW104
MW803D
MW803I
MW803S
MW231
30 day ave. daily rainfall

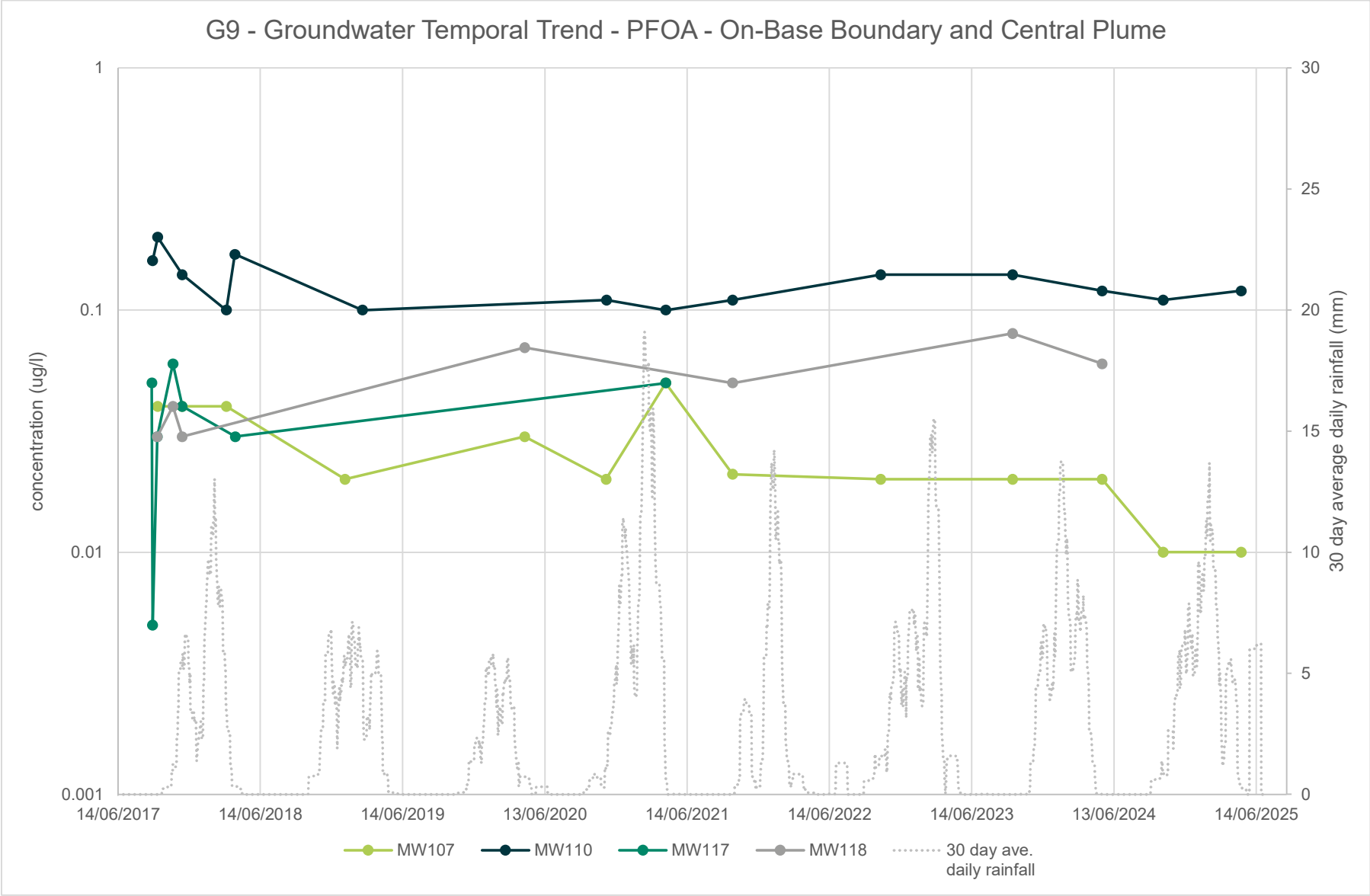

G4 - Groundwater Temporal Trend - PFOS+PFHxS - On-Base FTA
concentration (ug/l)
10000
1000
100
10
1
30 day average daily rainfall (mm)
30
25
20
15
10
5
0
13/12/2016
13/12/2017
13/12/2018
13/12/2019
13/12/2020
13/12/2021
13/12/2022
13/12/2023
13/12/2024
MW104
MW803D
MW803I
MW803S
MW231
30 day ave. daily rainfall

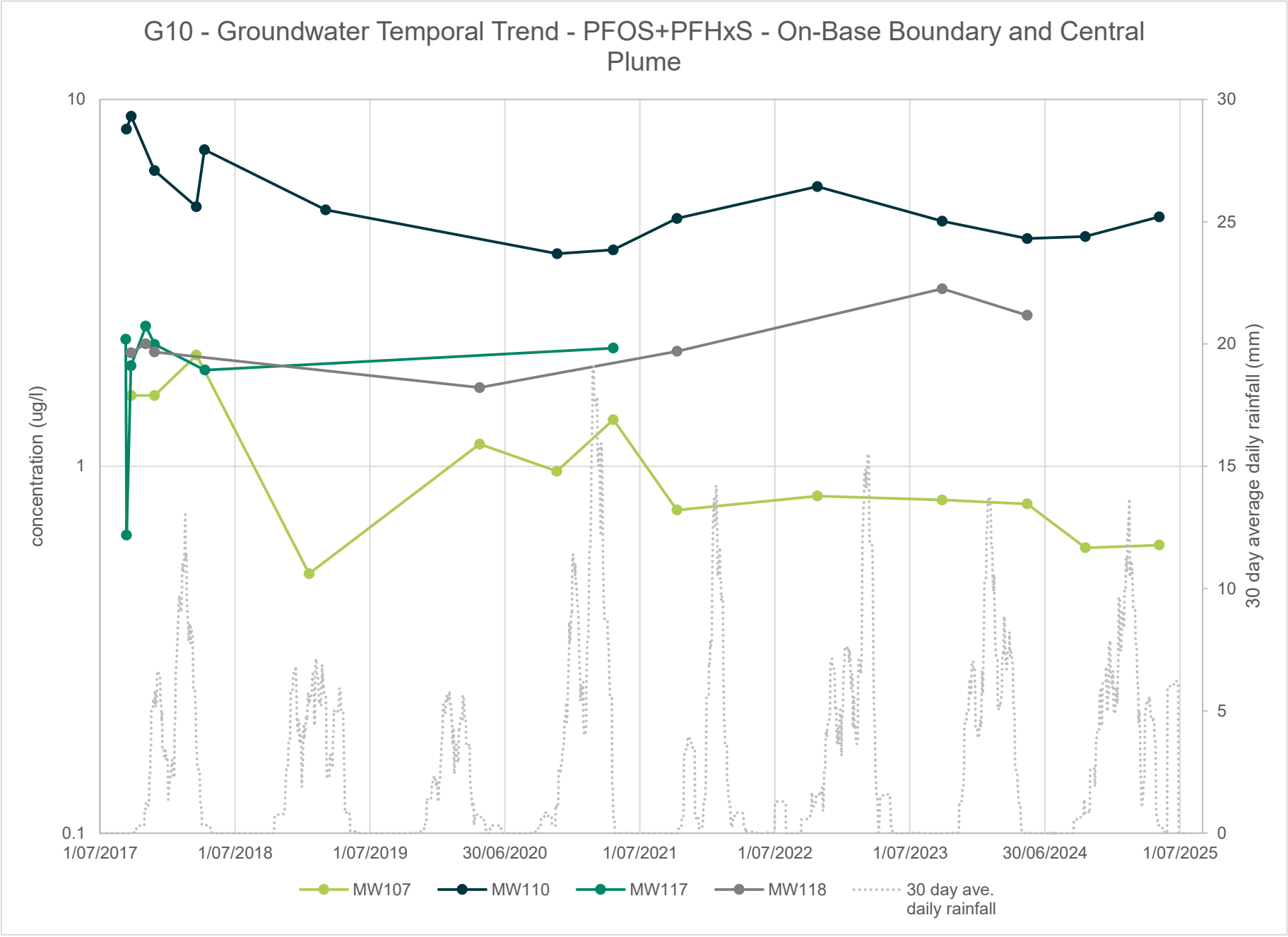

G5 - Groundwater Temporal Trend - PFOA - On-Base Minor Source Areas
concentration (ug/l)
30 day average daily rainfall (mm)
1
0.1
0.01
0.001
30
25
20
15
10
5
0
10/05/2016
10/05/2017
10/05/2018
10/05/2019
10/05/2020
10/05/2021
10/05/2022
10/05/2023
10/05/2024
10/05/2025
MW244
MW278
MW285
30 day ave. daily rainfall

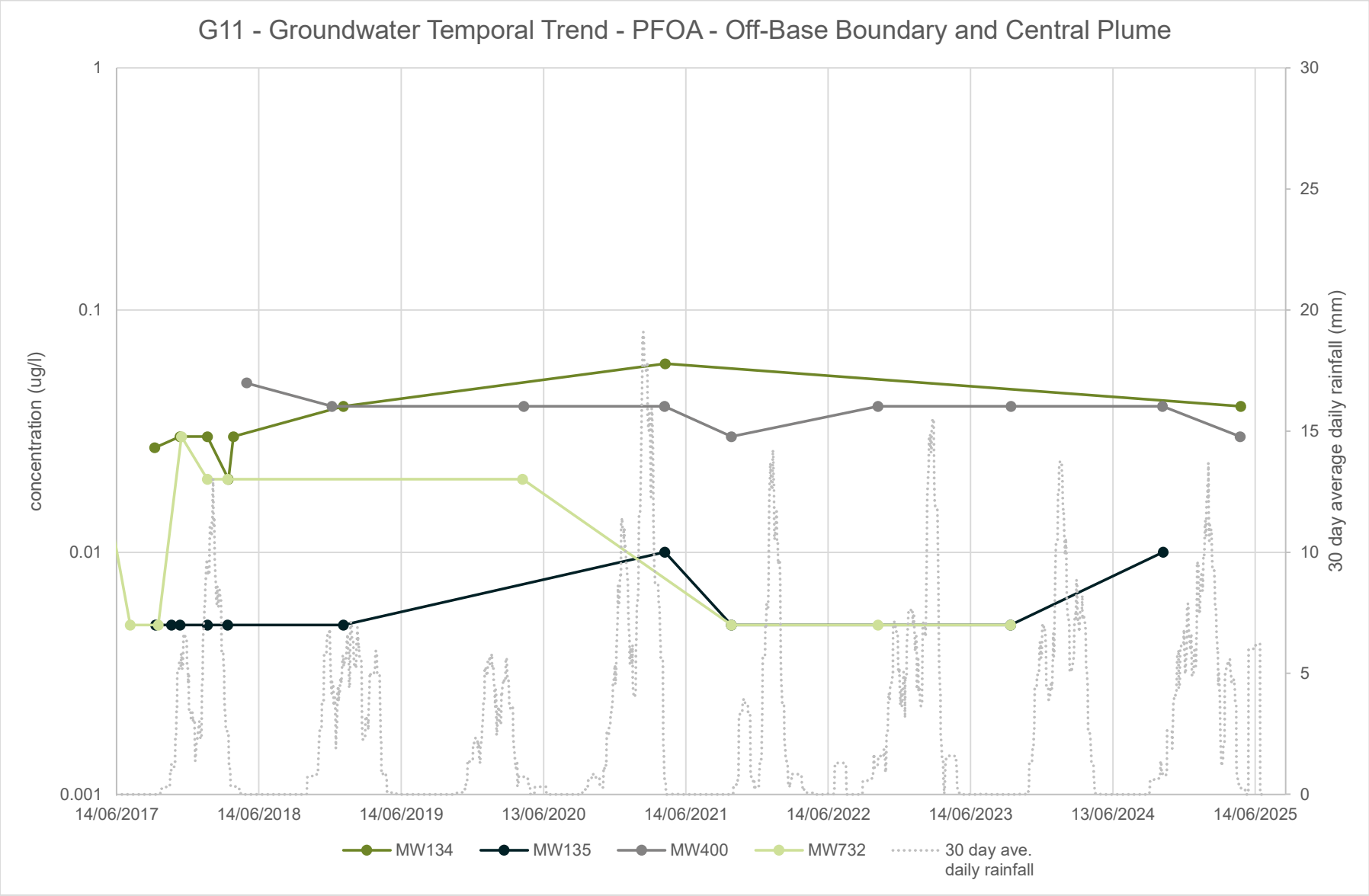

G6 - Groundwater Temporal Trend - PFOS+PFHxS - On-Base Minor Source Areas
concentration (ug/l)
100
10
1
0.1
30 day average daily rainfall (mm)
30
25
20
15
10
5
0
13/12/2016
13/12/2017
13/12/2018
13/12/2019
13/12/2020
13/12/2021
13/12/2022
13/12/2023
13/12/2024
MW244
MW278
MW285
30 day ave. daily rainfall

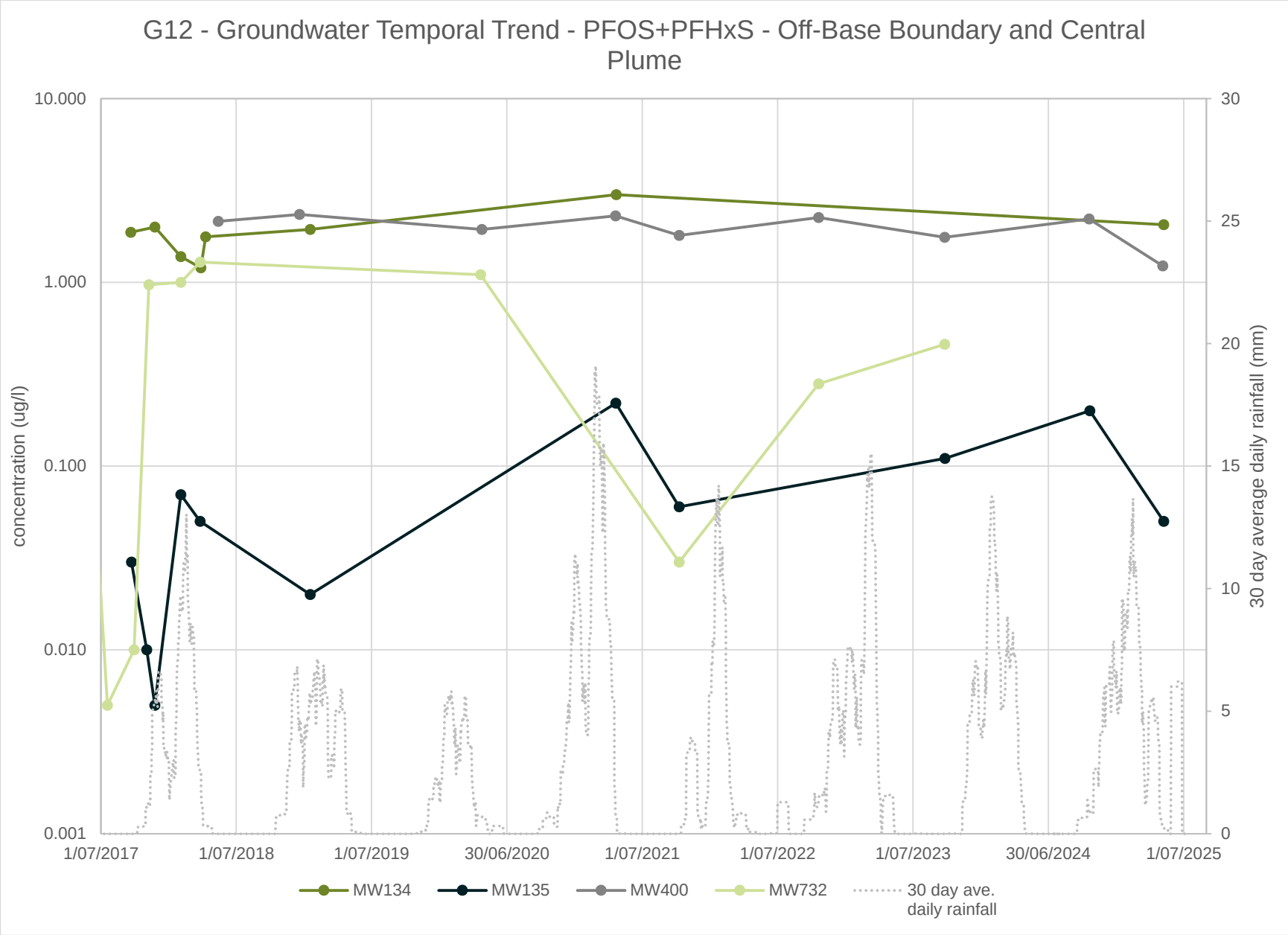

G7 - Groundwater Temporal Trend - PFOA - On-Base FSA
concentration (ug/l)
30 day average daily rainfall (mm)
100
10
1
0.1
0.01
30
25
20
15
10
5
0
10/05/2016
10/05/2017
10/05/2018
10/05/2019
10/05/2020
10/05/2021
10/05/2022
10/05/2023
10/05/2024
10/05/2025
MW802D
MW802S
MW802I
MW127
MW129
MW149
30 day ave. daily rainfall

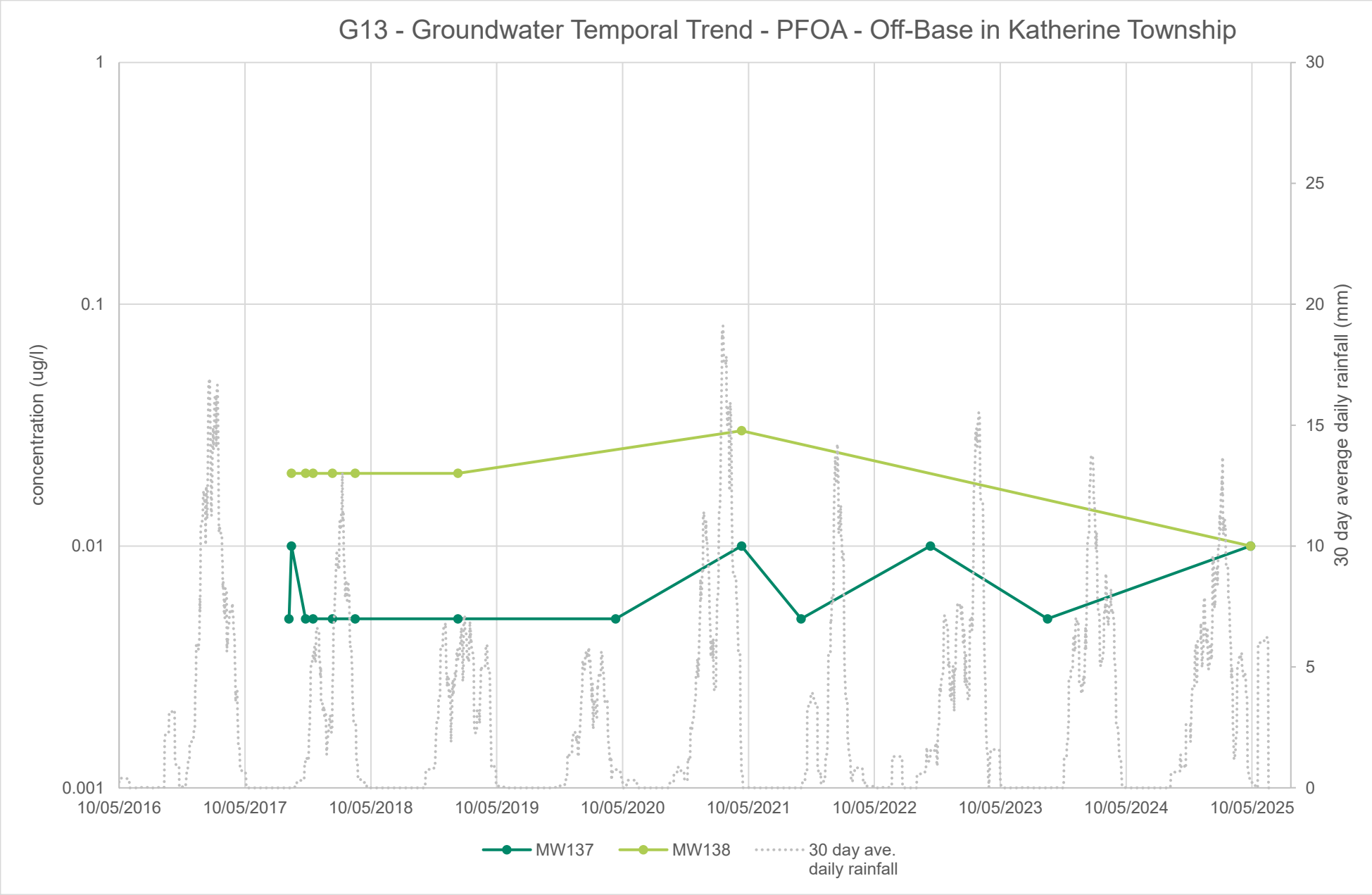

G8 - Groundwater Temporal Trend - PFOS+PFHxS - On Base FSA
concentration (ug/l)
10000
1000
100
10
1
30 day average daily rainfall (mm)
30
25
20
15
10
5
0
1/07/2017
1/07/2018
1/07/2019
30/06/2020
1/07/2021
1/07/2022
1/07/2023
30/06/2024
1/07/2025
MW802D
MW802I
MW802S
MW146
MW127
MW129
MW149
30 day ave. daily rainfall

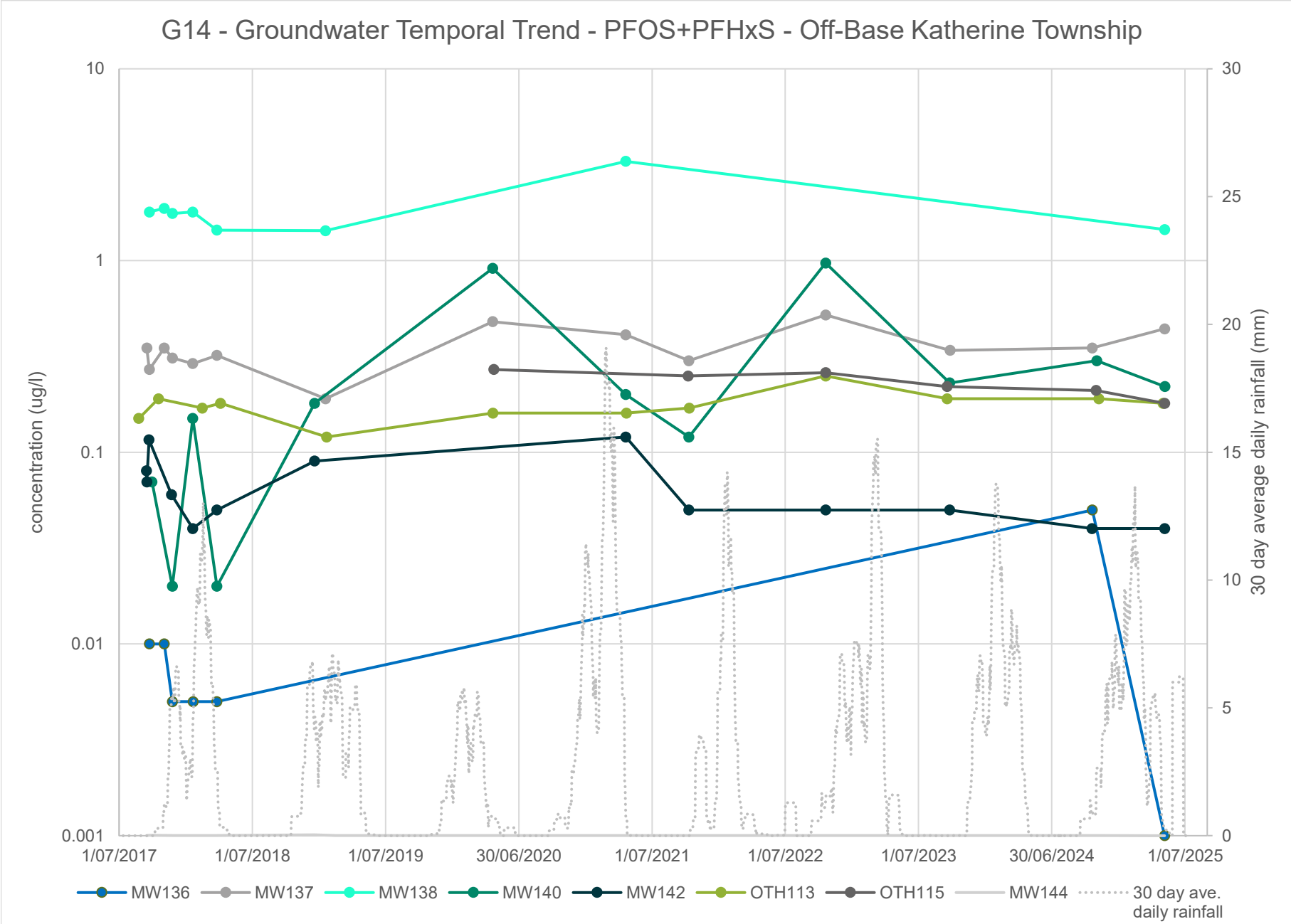

G9 - Groundwater Temporal Trend - PFOA - On-Base Boundary and Central Plume
concentration (ug/l)
1
0.1
0.01
0.001
30 day average daily rainfall (mm)
30
25
20
15
10
5
0
14/06/2017
14/06/2018
14/06/2019
13/06/2020
14/06/2021
14/06/2022
14/06/2023
13/06/2024
14/06/2025
MW107
MW110
MW117
MW118
30 day ave. daily rainfall

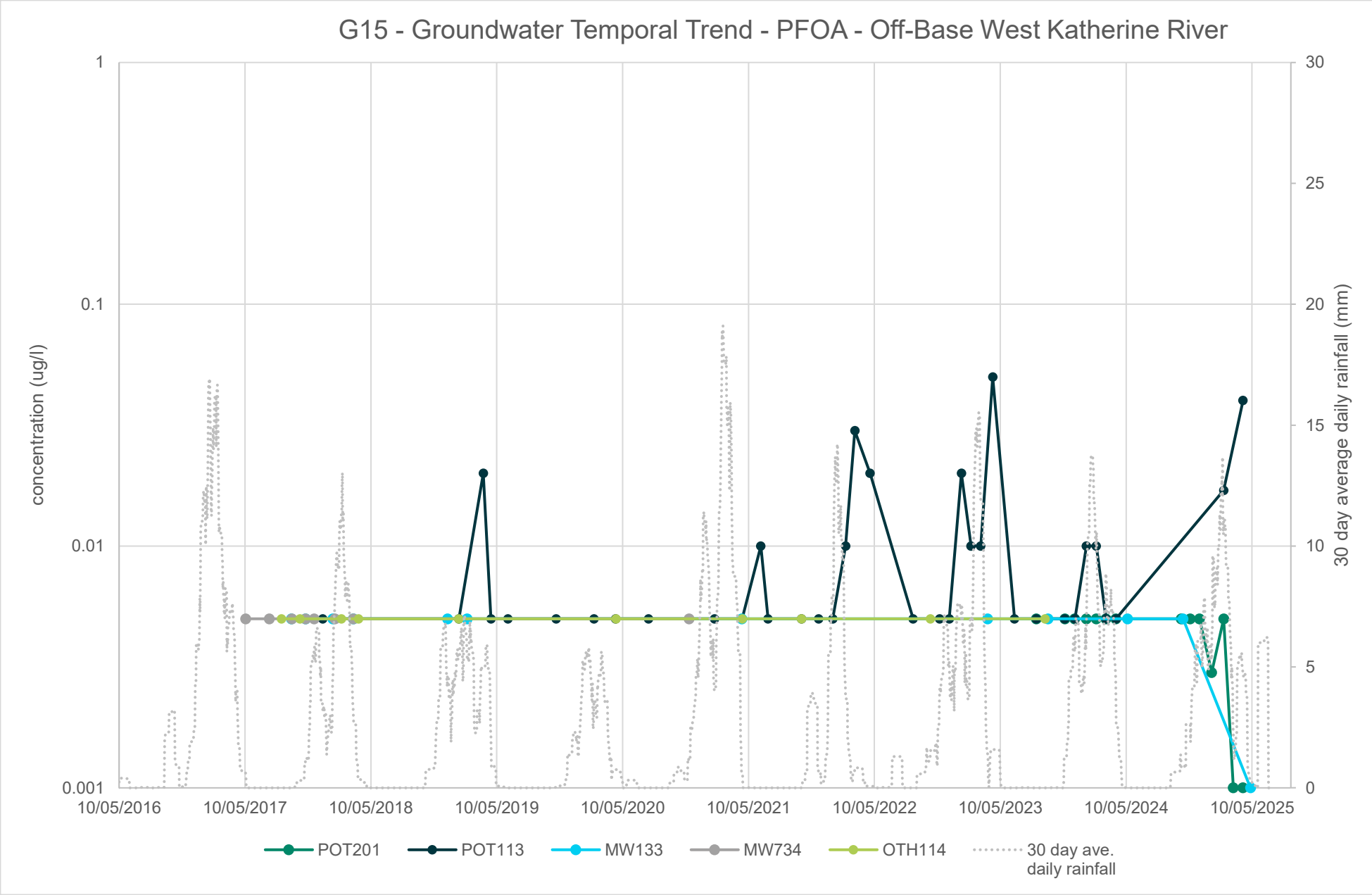

G10 - Groundwater Temporal Trend - PFOS+PFHxS - On-Base Boundary and Central Plume
concentration (ug/l)
30 day average daily rainfall (mm)
10
1
0.1
30
25
20
15
10
5
0
1/07/2017
1/07/2018
1/07/2019
30/06/2020
1/07/2021
1/07/2022
1/07/2023
30/06/2024
1/07/2025
MW107
MW110
MW117
MW118
30 day ave. daily rainfall

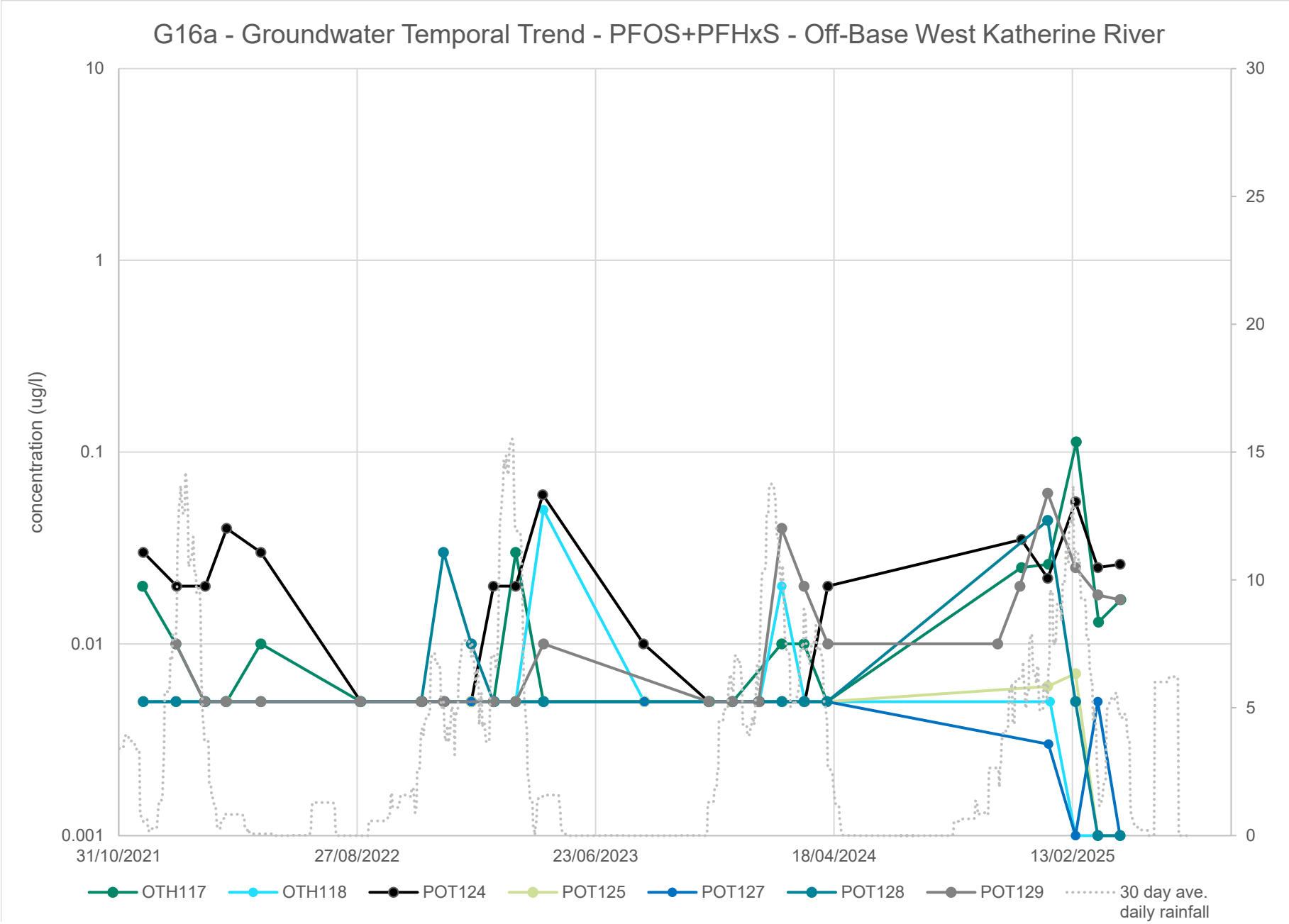

G11 - Groundwater Temporal Trend - PFOA - Off-Base Boundary and Central Plume
concentration (ug/l)
1
0.1
0.01
0.001
30 day average daily rainfall (mm)
30
25
20
15
10
5
0
14/06/2017
14/06/2018
14/06/2019
13/06/2020
14/06/2021
14/06/2022
14/06/2023
13/06/2024
14/06/2025
MW134
MW135
MW400
MW732
30 day ave. daily rainfall

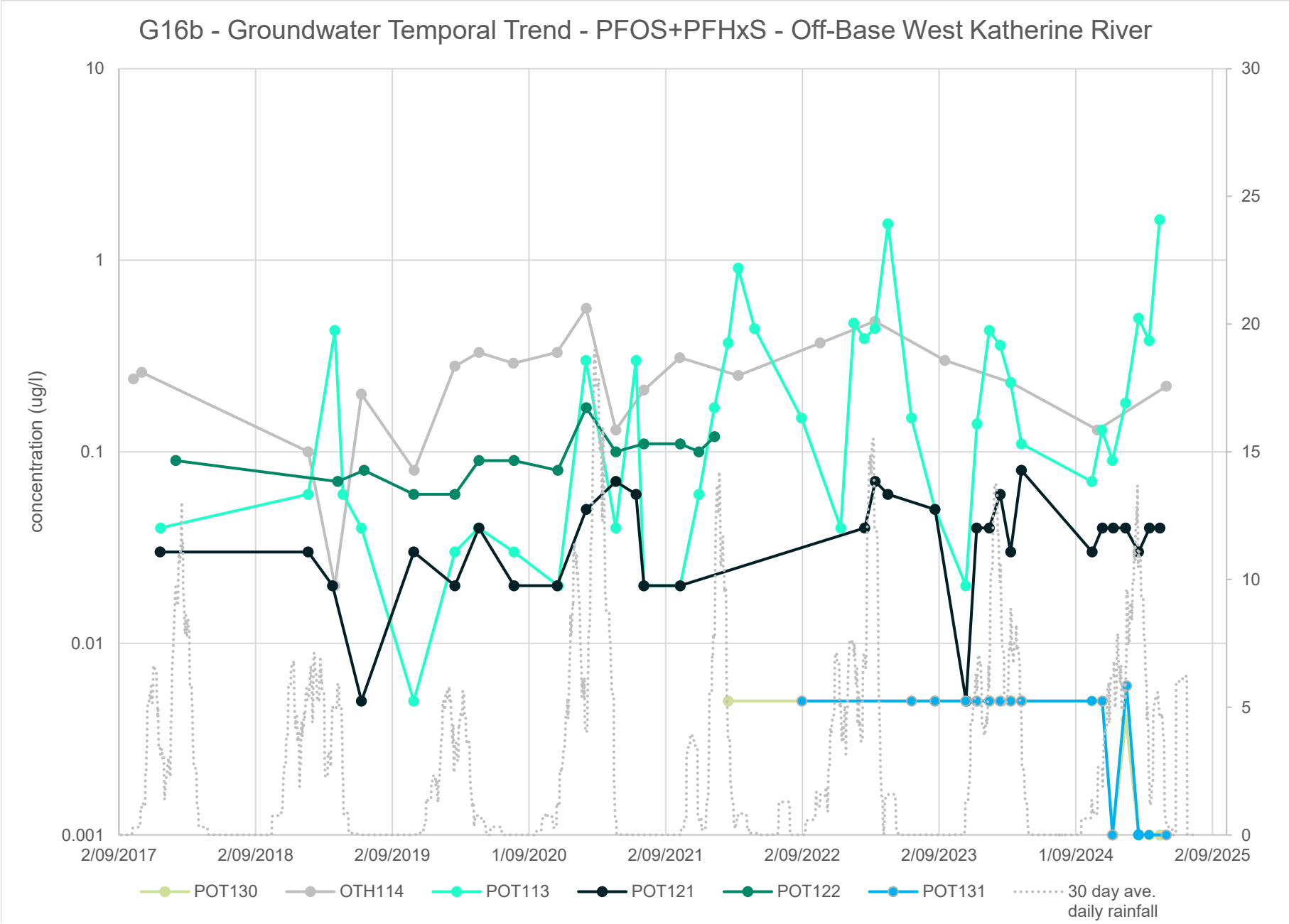

G12 - Groundwater Temporal Trend - PFOS+PFHxS - Off-Base Boundary and Central Plume
10.000
1.000
0.100
0.010
0.001
concentration (ug/l)
30
25
20
15
10
5
0
30 day average daily rainfall (mm)
1/07/2017
1/07/2018
1/07/2019
30/06/2020
1/07/2021
1/07/2022
1/07/2023
30/06/2024
1/07/2025
MW134
MW135
MW400
MW732
30 day ave. daily rainfall

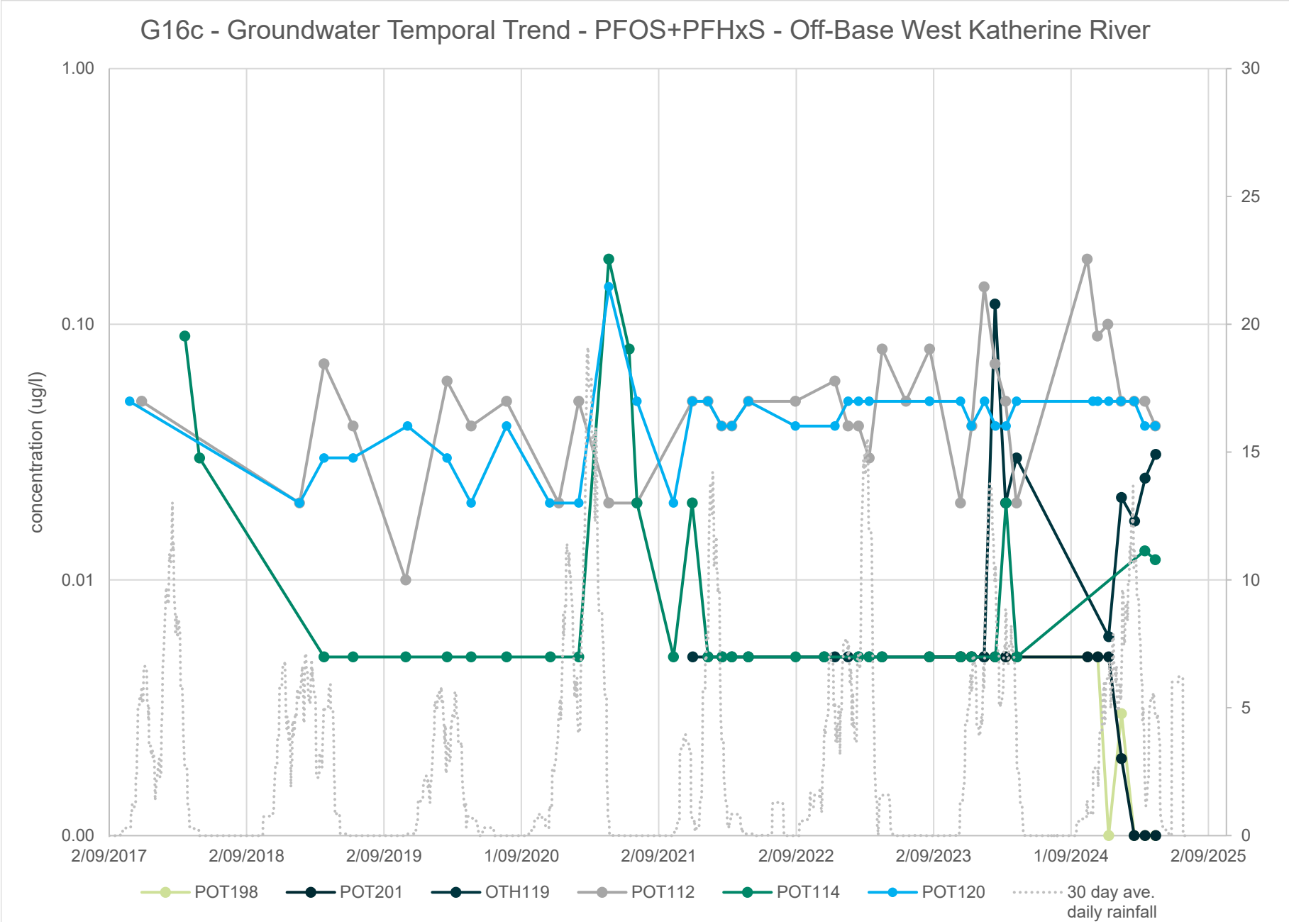

G13 - Groundwater Temporal Trend - PFOA - Off-Base in Katherine Township
concentration (ug/l)
1
0.1
0.01
0.001
30 day average daily rainfall (mm)
30
25
20
15
10
5
0
10/05/2016
10/05/2017
10/05/2018
10/05/2019
10/05/2020
10/05/2021
10/05/2022
10/05/2023
10/05/2024
10/05/2025
MW137
MW138
30 day ave. daily rainfall

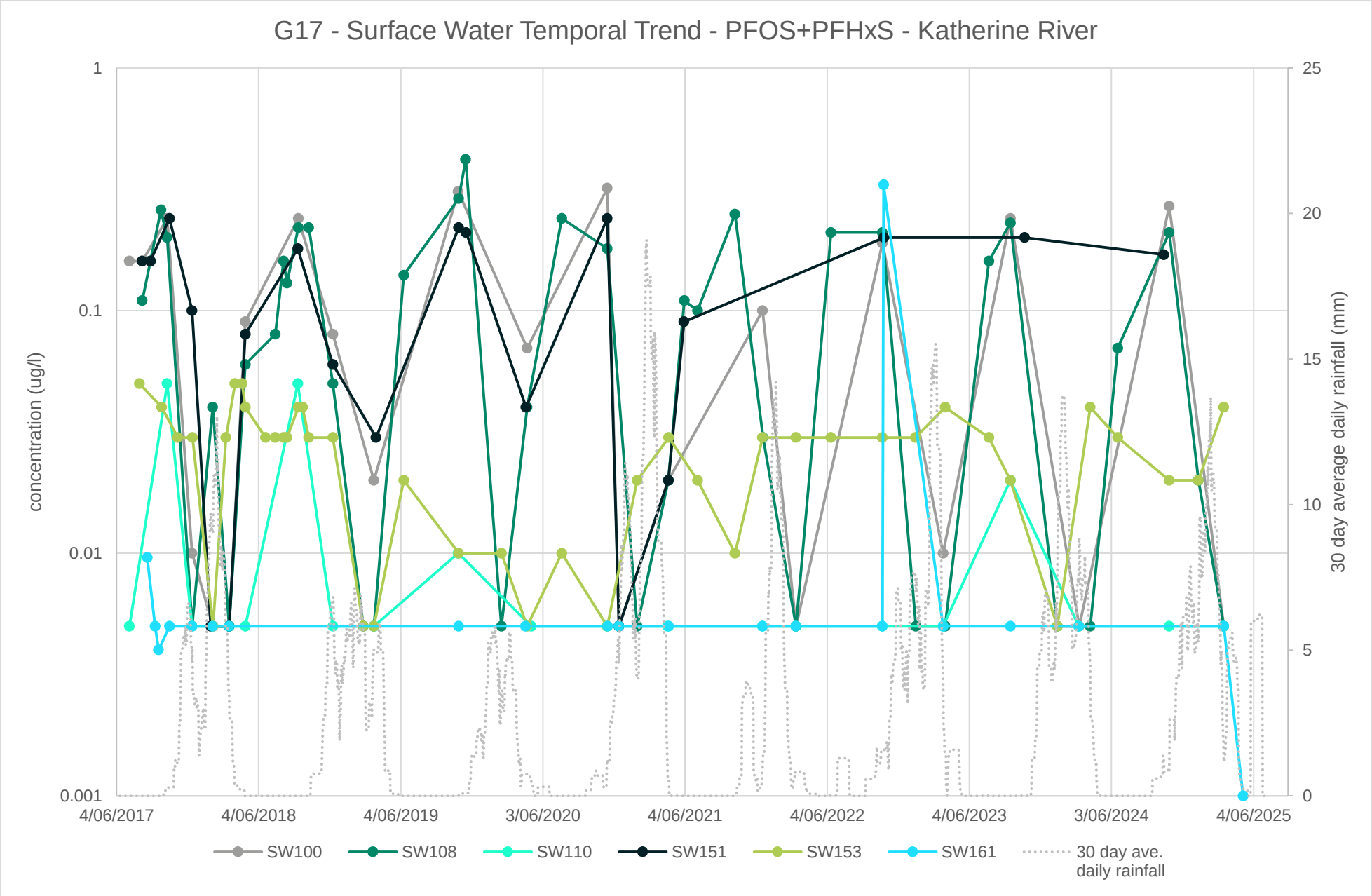

G14 - Groundwater Temporal Trend - PFOS+PFHxS - Off-Base Katherine Township
concentration (ug/l)
30 day average daily rainfall (mm)
10
1
0.1
0.01
0.001
30
25
20
15
10
5
0
1/07/2017
1/07/2018
1/07/2019
30/06/2020
1/07/2021
1/07/2022
1/07/2023
30/06/2024
1/07/2025
MW136
MW137
MW138
MW140
MW142
OTH113
OTH115
MW144
30 day ave. daily rainfall

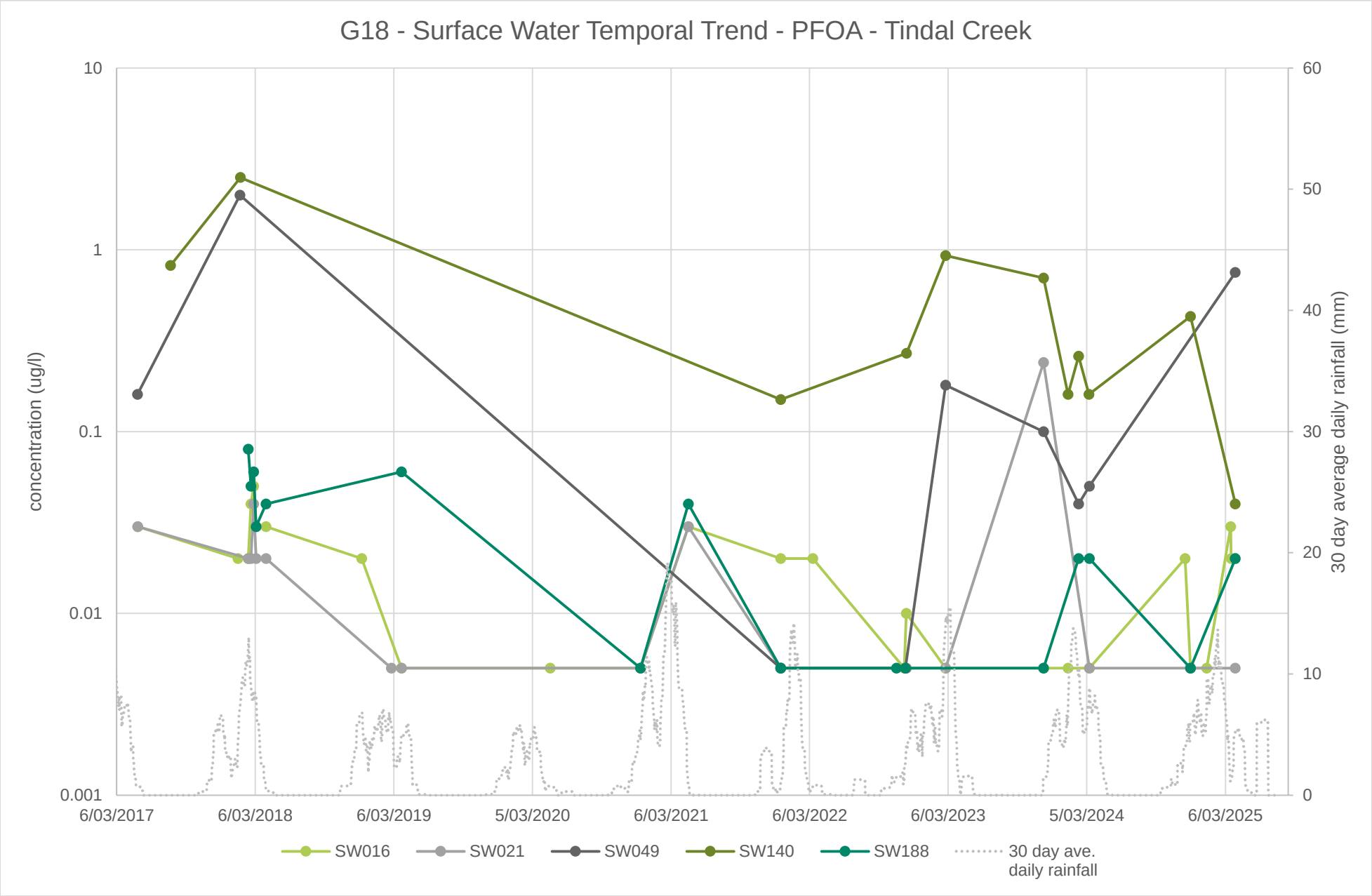

G15 - Groundwater Temporal Trend - PFOA - Off-Base West Katherine River
concentration (ug/l)
1
0.1
0.01
0.001
30 day average daily rainfall (mm)
30
25
20
15
10
5
0
10/05/2016
10/05/2017
10/05/2018
10/05/2019
10/05/2020
10/05/2021
10/05/2022
10/05/2023
10/05/2024
10/05/2025
POT201
POT113
MW133
MW734
OTH114
30 day ave. daily rainfall

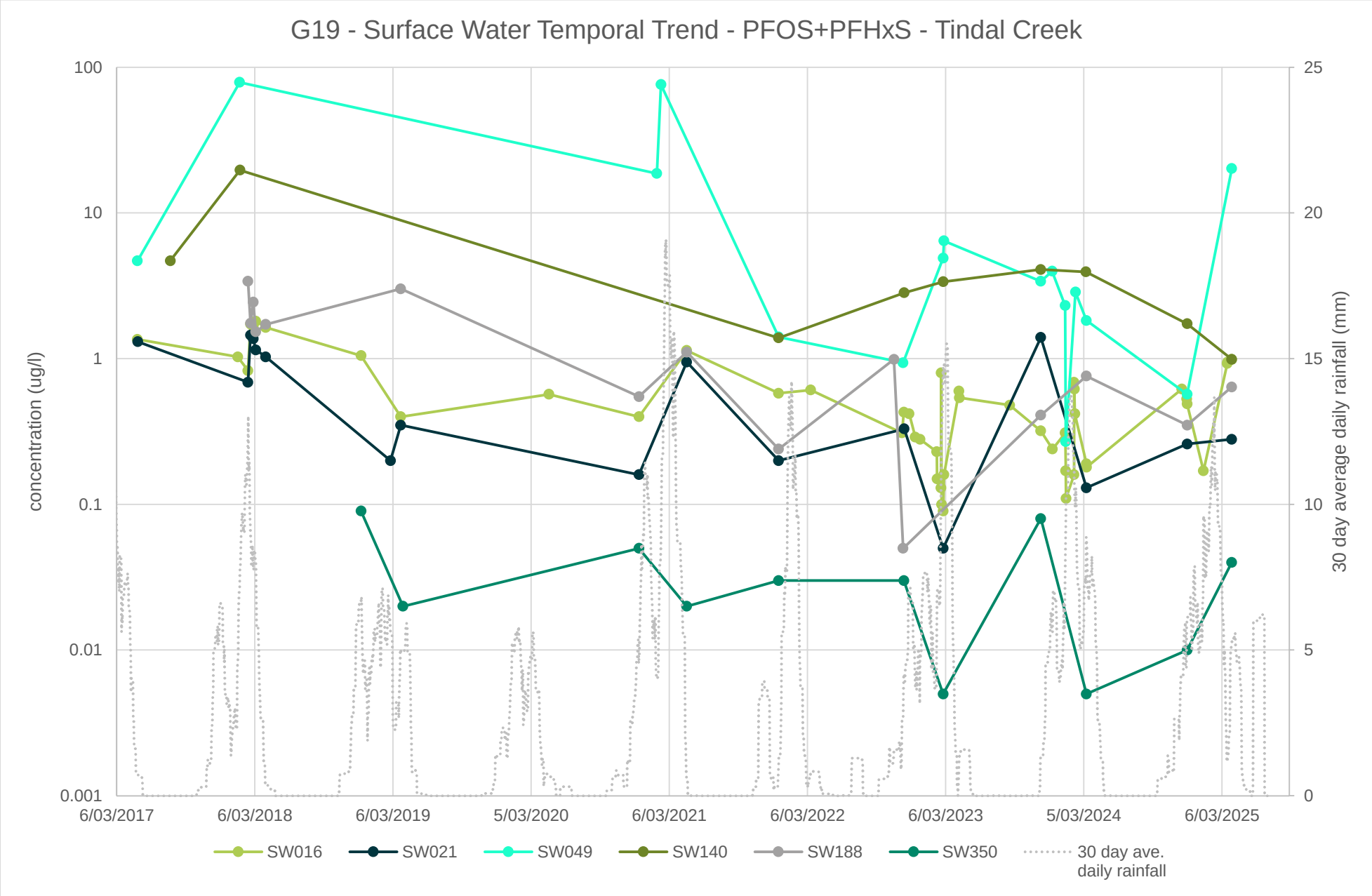

G16a - Groundwater Temporal Trend - PFOS+PFHxS - Off-Base West Katherine River
concentration (ug/l)
10
1
0.1
0.01
0.001
30
25
20
15
10
5
0
31/10/2021
27/08/2022
23/06/2023
18/04/2024
13/02/2025
OTH117
OTH118
POT124
POT125
POT127
POT128
POT129
30 day ave. daily rainfall

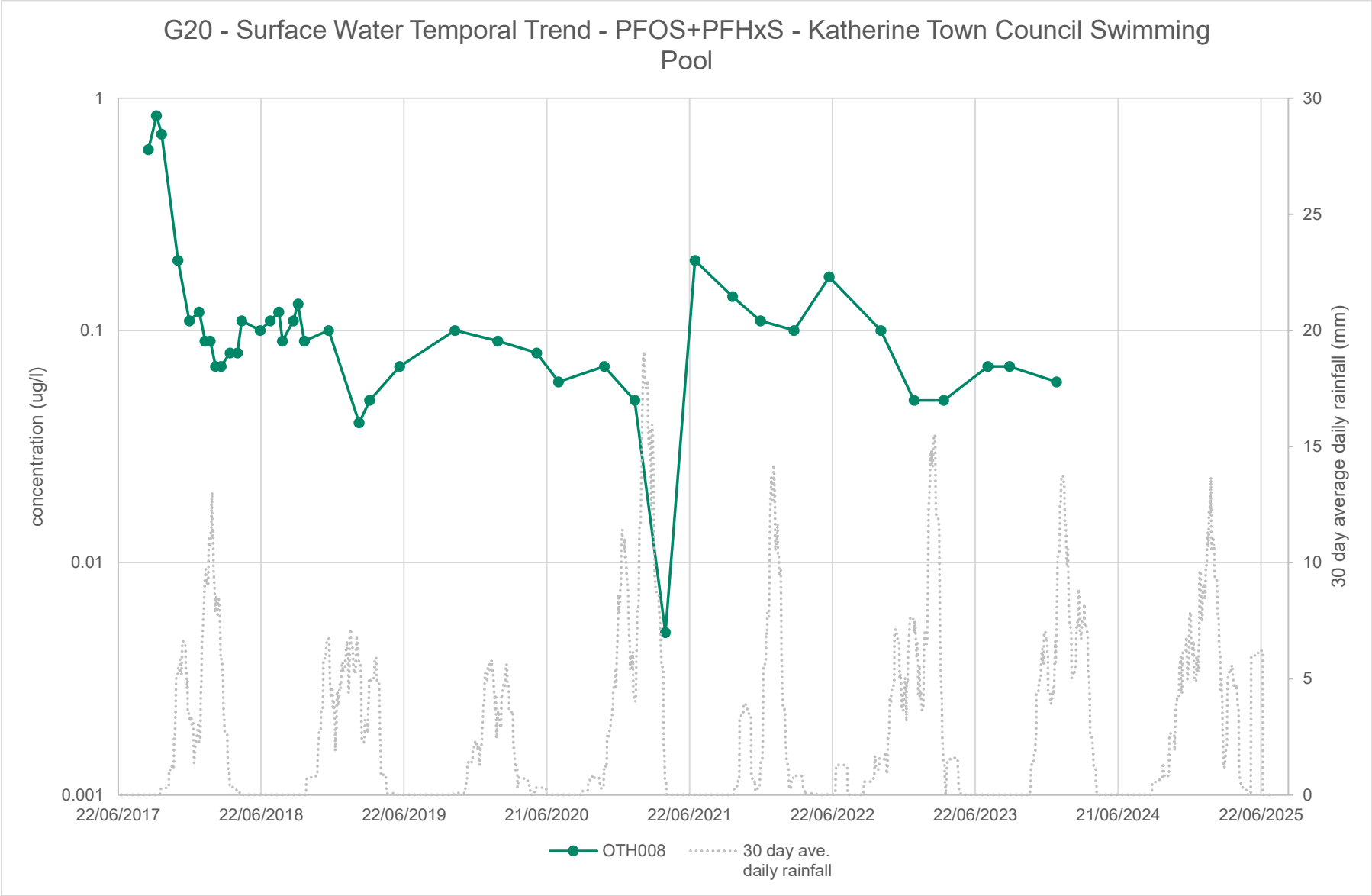

G16b - Groundwater Temporal Trend - PFOS+PFHxS - Off-Base West Katherine River
concentration (ug/l)
10
1
0.1
0.01
0.001
30
25
20
15
10
5
0
2/09/2017
2/09/2018
2/09/2019
1/09/2020
2/09/2021
2/09/2022
2/09/2023
1/09/2024
2/09/2025
POT130
OTH114
POT113
POT121
POT122
POT131
30 day ave. daily rainfall


G16c - Groundwater Temporal Trend - PFOS+PFHxS - Off-Base West Katherine River
concentration (ug/l)
1.00
0.10
0.01
0.00
30
25
20
15
10
5
0
2/09/2017
2/09/2018
2/09/2019
1/09/2020
2/09/2021
2/09/2022
2/09/2023
1/09/2024
2/09/2025
POT198
POT201
OTH119
POT112
POT114
POT120
30 day ave. daily rainfall


G17 - Surface Water Temporal Trend - PFOS+PFHxS - Katherine River
concentration (ug/l)
1
0.1
0.01
0.001
30 day average daily rainfall (mm)
25
20
15
10
5
0
4/06/2017
4/06/2018
4/06/2019
3/06/2020
4/06/2021
4/06/2022
4/06/2023
3/06/2024
4/06/2025
SW100
SW108
SW110
SW151
SW153
SW161
30 day ave. daily rainfall


G18 - Surface Water Temporal Trend - PFOA - Tindal Creek
concentration (ug/l)
30 day average daily rainfall (mm)
10
1
0.1
0.01
0.001
60
50
40
30
20
10
0
6/03/2017
6/03/2018
6/03/2019
5/03/2020
6/03/2021
6/03/2022
6/03/2023
5/03/2024
6/03/2025
SW016
SW021
SW049
SW140
SW188
30 day ave. daily rainfall


G19 - Surface Water Temporal Trend - PFOS+PFHxS - Tindal Creek
concentration (ug/l)
30 day average daily rainfall (mm)
100
10
1
0.1
0.01
0.001
25
20
15
10
5
0
6/03/2017
6/03/2018
6/03/2019
5/03/2020
6/03/2021
6/03/2022
6/03/2023
5/03/2024
6/03/2025
SW016
SW021
SW049
SW140
SW188
SW350
30 day ave. daily rainfall


G20 - Surface Water Temporal Trend - PFOS+PFHxS - Katherine Town Council Swimming Pool
concentration (ug/l)
1
0.1
0.01
0.001
30 day average daily rainfall (mm)
30
25
20
15
10
5
0
22/06/2017
22/06/2018
22/06/2019
21/06/2020
22/06/2021
22/06/2022
22/06/2023
21/06/2024
22/06/2025
OTH008
30 day ave. daily rainfall

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Appendix E

Statistical analysis

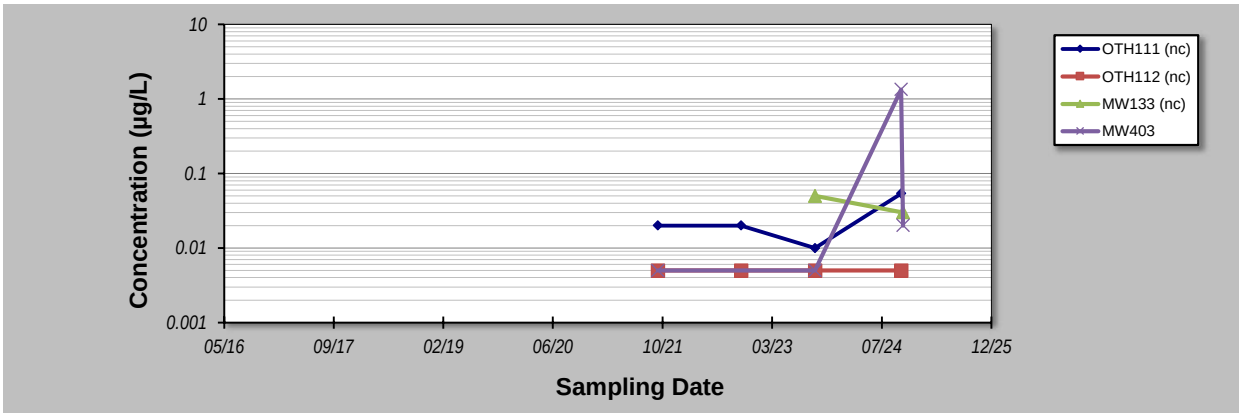
Appendix E Statistical analysis

Management area	Region of interest	Seasonal period	Groundwater locations
On-base	FTA	End of dry season	MW104, MW231 and MW230
	FSA	End of dry season	MW127, MW126 and MW406 (including original location MW405 for December 2018)
Minor source areas	Fuel Farm1, Fuel Farm 2, and MEOMS	End of dry season	MW244, MW278 and MW285
Base Boundary and Central Plume	On-base cross and upgradient	End of dry season	MW734 (including contingency well MW132 data), MW133 (which was replaced by MW734 in 2021), OTH111 and OTH112.
	On-base boundary and central transects	End of dry season	MW107, MW110, MW117 (including contingency well MW118 data) and MW403 (including contingency well MW735 data)
	Off-base central plume and Uralla	End of dry season	MW134 (including contingency well MW732 data), MW135 (including contingency well OTH123 data), MW400 and POT111
Off-base Katherine Township	Katherine Township and East Katherine	End of dry season	MW137, MW138 (including contingency well OTH116 data), MW140, MW142, OTH115, OTH113 and POT119
Off-base West Katherine River	Emungalan and Cossack	End of dry season, End of wet season	MW528, OTH120, OTH114, POT112, POT113, POT114, POT120, POT121, POT122, POT124, POT125, POT126, POT127, POT128, POT129, POT130, OTH117 and OTH118

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	18-Jun-25	Job ID:	60676801
Facility Name:	RAAF TINDAL - Up/Cross Gradient	Constituent:	PFOS + PFHxS (end of dry season)
Conducted By:	DDT	Concentration Units:	µg/L

Sampling Point ID:	OTH111 (nc)	OTH112 (nc)	MW133 (nc)	MW403			
Sampling Event	**Sampling Date**	**PFOS + PFHXS (END OF DRY SEASON) CONCENTRATION (µg/L)**					
1	Sep-17						
2	Nov-17						
3	Dec-18						
4	Nov-20						
5	Oct-21	0.02	0.005		0.005		
6	Oct-22	0.02	0.005				
7	Sep-23	0.01	0.005	0.05	0.005		
8	Oct-24	0.054	0.005		1.34		
9	Nov-24			0.03	0.02		
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
Coefficient of Variation:		0.74	0.00	0.35	1.94		
Mann-Kendall Statistic (S):		1	0	-1	3		
Confidence Factor:		50.0%	37.5%		72.9%		
Concentration Trend:		No Trend	Stable		No Trend		



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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Contingency well analytical results presented

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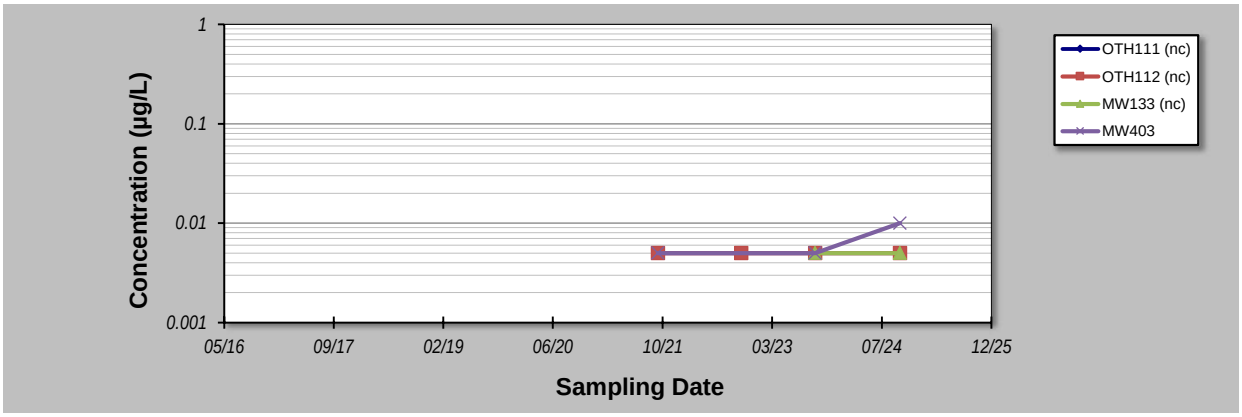
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	18-Jun-25	Job ID:	60676801
Facility Name:	RAAF TINDAL - Up/Cross Gradient	Constituent:	PFOA (end of dry season)
Conducted By:	DDT	Concentration Units:	µg/L

Sampling Point ID:	OTH111 (nc)	OTH112 (nc)	MW133 (nc)	MW403			
Sampling Event	**Sampling Date**	**PFOA (END OF DRY SEASON) CONCENTRATION (µg/L)**					
1	Sep-17						
2	Nov-17						
3	Jan-18						
4	Mar-18						
5	Apr-18						
6	Dec-18						
7	Jan-19						
8	Feb-19						
9	Mar-19						
10	Apr-20						
11	Nov-20						
12	Jan-20						
13	Apr-21						
14	Oct-21	0.005	0.005		0.005		
15	Oct-22	0.005	0.005				
16	Sep-23	0.005	0.005	0.005	0.005		
17	Oct-24	0.005	0.005	0.005	0.01		
18							
19							
20							
Coefficient of Variation:		0.00	0.00	0.00	0.37	0.00	0.00	0.00
Mann-Kendall Statistic (S):		0	0	0	0	0	0	0
Confidence Factor:		40.8%	37.5%		40.8%			
Concentration Trend:		Stable	Stable		Stable			



Notes:

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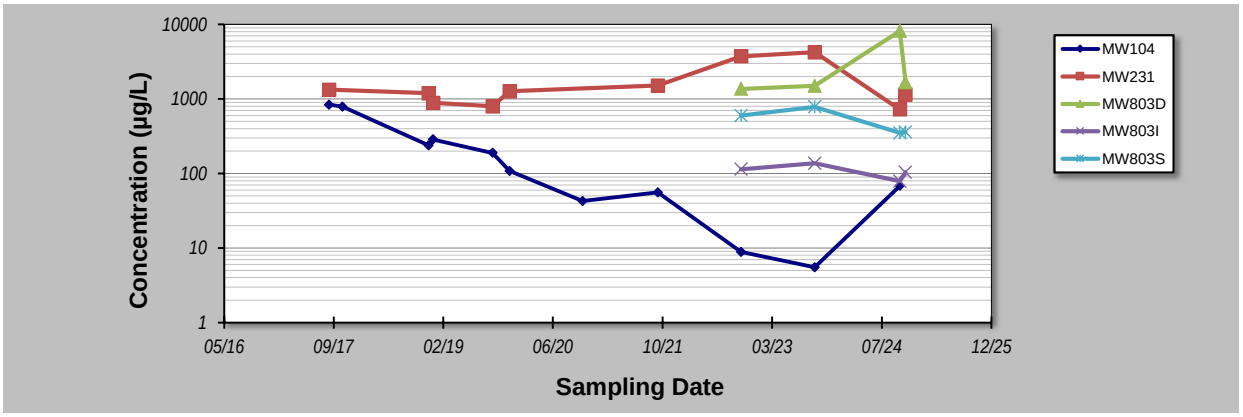
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **18-Jun-25**
Facility Name: **RAAF TINDAL - FTA**
Conducted By: **DDT**

Job ID: **60676801**
Constituent: **PFOS + PFHxS (end of dry season)**
Concentration Units: µg/L

Sampling Point ID:		MW104	MW231	MW803D	MW803I	MW803S		
Sampling Event	Sampling Date	PFOS + PFHXS (END OF DRY SEASON) CONCENTRATION (µg/L)						
1	Sep-17	840	1330					
2	Nov-17	790.00						
3	Jan-18							
4	Mar-18							
5	Nov-18	239.00	1190.00					
6	Dec-18	286	890					
7	Jan-19							
8	Sep-19	189.00	794.00					
9	Dec-19	108.00	1270.00					
10	Apr-20							
11	Nov-20	42.7						
12	Jan-20							
13	Apr-21							
14	Oct-21	55.5	1520.00					
15	Oct-22	8.84	3740.00	1370.00	114.00	598.00		
16	Sep-23	5.52	4230.00	1500.00	137.00	786.00		
17	Oct-24	68.30	727.00	8170.00	78.70	351.00		
18	Nov-24		1150.00	1670.00	104.00	359.00		
19								
20								
Coefficient of Variation:		1.25	0.74	1.05	0.22	0.40		
Mann-Kendall Statistic (S):		-43	3	4	-2	-2		
Confidence Factor:		>99.9%	56.9%	83.3%	62.5%	62.5%		
Concentration Trend:		Decreasing	No Trend	No Trend	Stable	Stable		



Notes:

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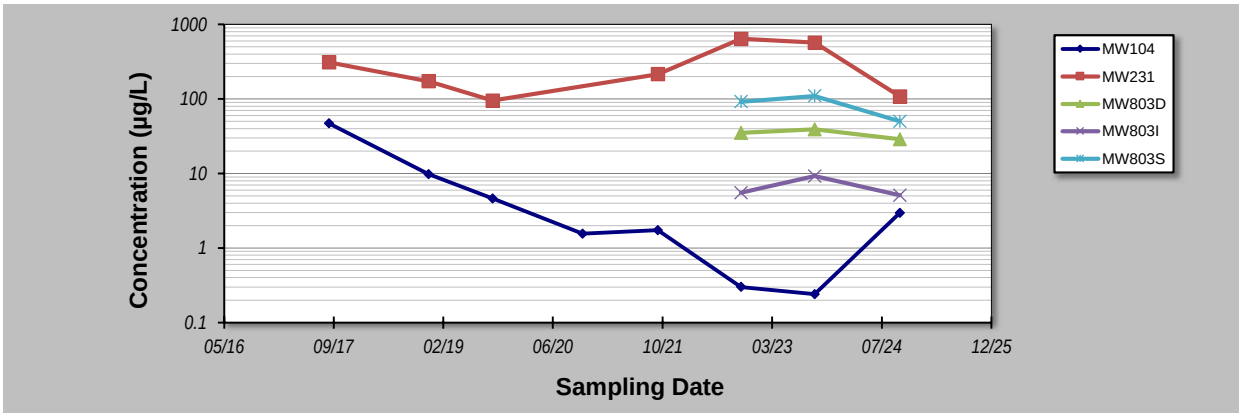
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **18-Jun-25**
Facility Name: **RAAF TINDAL - FTA**
Conducted By: **DDT**

Job ID: **60676801**
Constituent: **PFOA (end of dry season)**
Concentration Units: µg/L

Sampling Point ID:	MW104	MW231	MW803D	MW803I	MW803S		
Sampling Event	Sampling Date	PFOA (END OF DRY SEASON) CONCENTRATION (µg/L)					
1	Sep-17	47	310				
2	Nov-17						
3	Jan-18						
4	Mar-18						
5	Apr-18						
6	Nov-18	9.77	173				
7	Jan-19						
8	Feb-19						
9	Sep-19	4.61	95.50				
10	Apr-20						
11	Nov-20	1.56					
12	Jan-20						
13	Apr-21						
14	Oct-21	1.74	215.00				
15	Oct-22	0.3	642.00	35.00	5.50	92	
16	Sep-23	0.24	568.00	39.10	9.25	110.00	
17	Oct-24	2.96	108.00	28.80	5.09	50.00	
18							
19							
20							
Coefficient of Variation:		1.86	0.73	0.15	0.35	0.37	
Mann-Kendall Statistic (S):		-18	1	-1	-1	-1	
Confidence Factor:		98.4%	50.0%				
Concentration Trend:		Decreasing	No Trend				



Notes:

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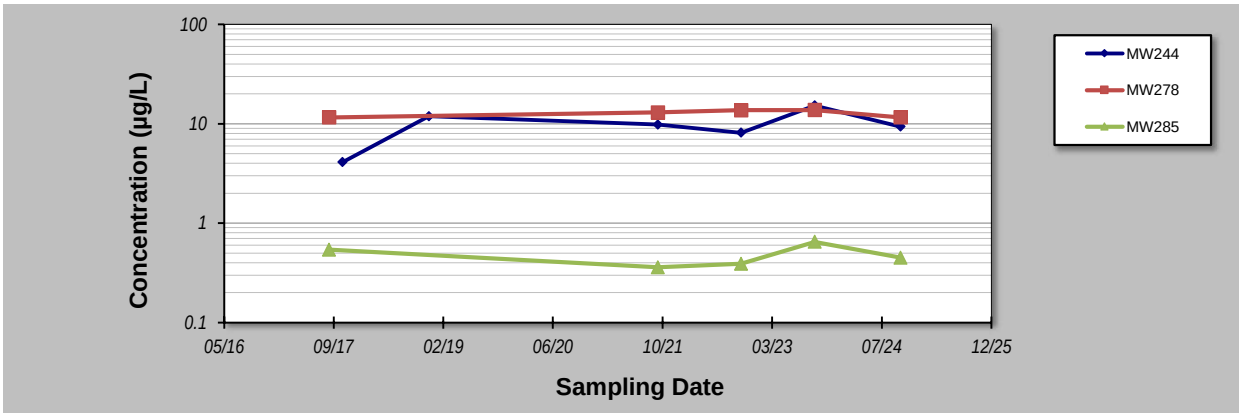
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	18-Jun-25	Job ID:	60676801
Facility Name:	RAAF TINDAL - Minor Source Areas	Constituent:	PFOS + PFHxS (End of Dry Season)
Conducted By:	DDT	Concentration Units:	µg/L

Sampling Point ID:	MW244	MW278	MW285				
Sampling Event	**Sampling Date**	**PFOS + PFHXS (END OF DRY SEASON) CONCENTRATION (µg/L)**						
1	Sep-17		11.6	0.54				
2	Nov-17	4.12						
3	Jan-18							
4	Mar-18							
5	Apr-18							
6	Dec-18	11.9						
7	Jan-19							
8	Feb-19							
9	Mar-19							
10	Apr-20							
11	Nov-20							
12	Jan-20							
13	Apr-21							
14	Oct-21	9.82	13	0.36				
15	Oct-22	8.13	13.7	0.39				
16	Sep-23	15.300	13.800	0.650				
17	Oct-24	9.360	11.600	0.450				
18								
19								
20								
Coefficient of Variation:		0.38	0.09	0.25				
Mann-Kendall Statistic (S):		3	3	2				
Confidence Factor:		64.0%	67.5%	59.2%				
Concentration Trend:		No Trend	No Trend	No Trend				



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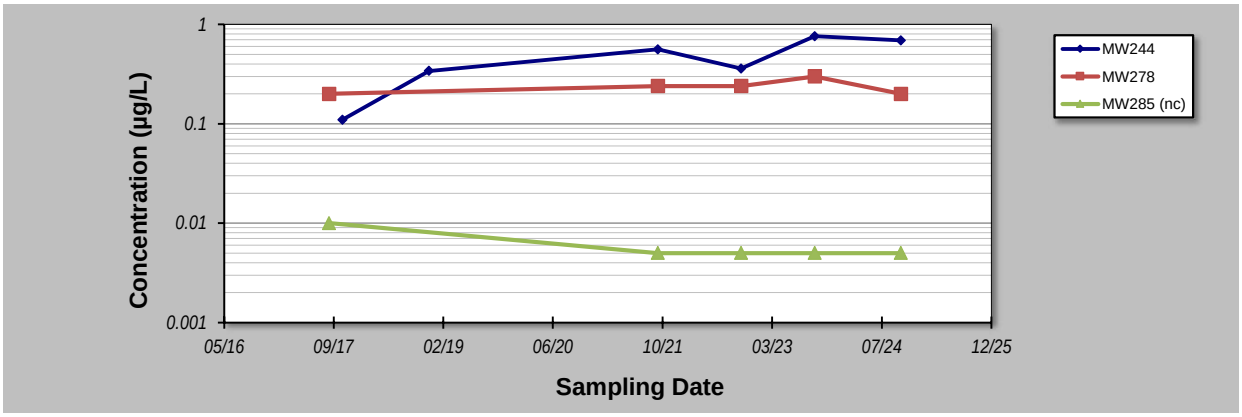
Evaluation Date:	18-Jun-25	Job ID:	60676801
Facility Name:	RAAF TINDAL - Minor Source Areas	Constituent:	PFOA (End of Dry Season)
Conducted By:	DDT	Concentration Units:	µg/L

Sampling Point ID:	MW244	MW278	MW285 (nc)				
Sampling Event	**Sampling Date**	**PFOA (END OF DRY SEASON) CONCENTRATION (µg/L)**						
1	Sep-17		0.2	0.01				
2	Nov-17	0.11						
3	Jan-18							
4	Mar-18							
5	Apr-18							
6	Dec-18	0.34						
7	Jan-19							
8	Feb-19							
9	Mar-19							
10	Apr-20							
11	Nov-20							
12	Jan-20							
13	Apr-21							
14	Oct-21	0.56	0.24	0.005				
15	Oct-22	0.36	0.24	0.005				
16	Sep-23	0.760	0.300	0.005				
17	Oct-24	0.690	0.200	0.005				
18								
19								
20								
Coefficient of Variation:		0.52	0.17	0.37				
Mann-Kendall Statistic (S):		11	2	-4				
Confidence Factor:		97.2%	59.2%	75.8%				
Concentration Trend:		Increasing	No Trend	Stable				



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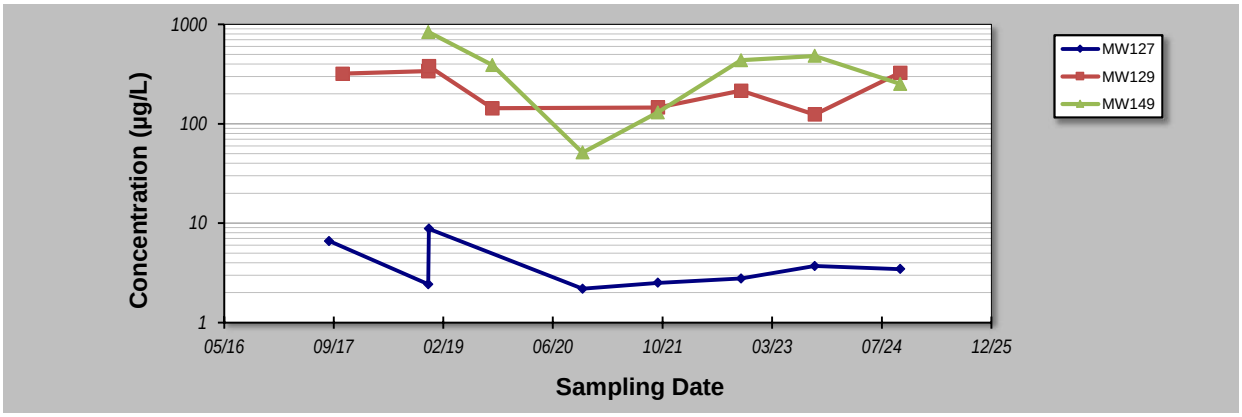
for Constituent Trend Analysis

Evaluation Date: **18-Jun-25**
Facility Name: **RAAF TINDAL - FSA**
Conducted By: **DDT**

Job ID: **60676801**
Constituent: **PFOS + PFHxS (End of Dry Season)**
Concentration Units: µg/L

Sampling Point ID:		MW127	MW129	MW149				
Sampling Event	Sampling Date	PFOS + PFHXS (END OF DRY SEASON) CONCENTRATION (µg/L)						
1	Sep-17	6.6						
2	Nov-17		320					
3	Jan-18							
4	Mar-18							
5	Apr-18							
6	Nov-18	2.43	339	840				
7	Dec-18	8.8	380					
8	Feb-19							
9	Sep-19		143	391				
10	Apr-20							
11	Nov-20	2.19		51.4				
12	Jan-20							
13	Apr-21							
14	Oct-21	2.51	146	130				
15	Oct-22	2.77	216	437				
16	Sep-23	3.71	124	482				
17	Oct-24	3.45	326	252				
18								
19								
20								
Coefficient of Variation:		0.59	0.41	0.71				
Mann-Kendall Statistic (S):		2	-6	-1				
Confidence Factor:		54.8%	72.6%	50.0%				
Concentration Trend:		No Trend	Stable	Stable				



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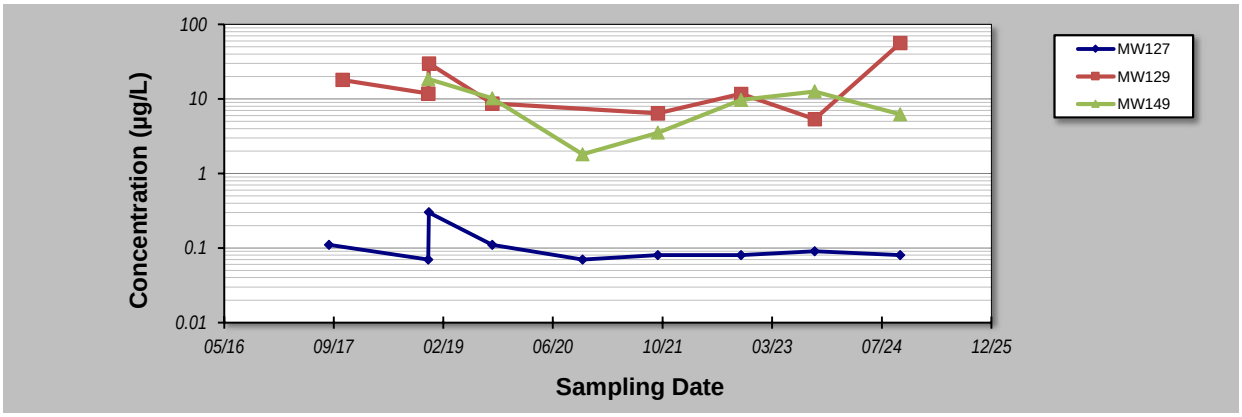
Evaluation Date:	18-Jun-25	Job ID:	60676801
Facility Name:	RAAF TINDAL - FSA	Constituent:	PFOA (End of Dry Season)
Conducted By:	DDT	Concentration Units:	µg/L

Sampling Point ID:		MW127	MW129	MW149				
Sampling Event	Sampling Date	PFOA (END OF DRY SEASON) CONCENTRATION (µg/L)						
1	Sep-17	0.11						
2	Nov-17		18					
3	Jan-18							
4	Mar-18							
5	Nov-18	0.07	11.8	18.5				
6	Dec-18	0.3	30					
7	Jan-19							
8	Feb-19							
9	Sep-19	0.11	8.72	10.2				
10	Apr-20							
11	Nov-20	0.07		1.81				
12	Jan-20							
13	Apr-21							
14	Oct-21	0.08	6.41	3.52				
15	Oct-22	0.08	11.7	9.7				
16	Sep-23	0.09	5.37	12.6				
17	Oct-24	0.08	56.2	6.22				
18								
19								
20								
Coefficient of Variation:		0.66	0.93	0.64				
Mann-Kendall Statistic (S):		-5	-6	-3				
Confidence Factor:		65.7%	72.6%	61.4%				
Concentration Trend:		Stable	Stable	Stable				



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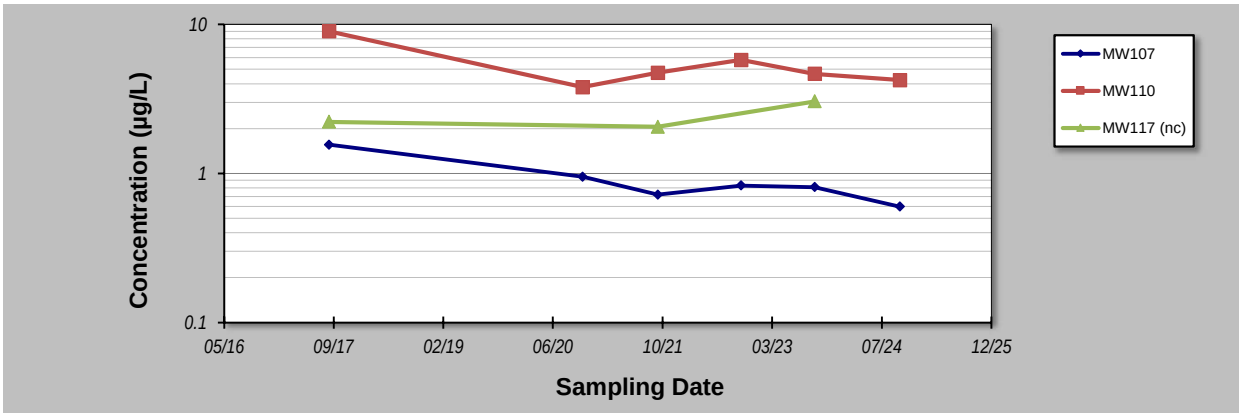
for Constituent Trend Analysis

Evaluation Date: **18-Jun-25**
Facility Name: **RAAF TINDAL - On-Base Boundary/Central**
Conducted By: **DDT**

Job ID: **60676801**
Constituent: **PFOS + PFHxS (End of Dry Season)**
Concentration Units: µg/L

Sampling Point ID:		MW107	MW110	MW117 (nc)				
Sampling Event	Sampling Date	PFOS + PFHXS (END OF DRY SEASON) CONCENTRATION (µg/L)						
1	Sep-17	1.56	9	2.22				
2	Nov-17							
3	Jan-18							
4	Mar-18							
5	Apr-18							
6	Dec-18							
7	Jan-19							
8	Feb-19							
9	Mar-19							
10	Apr-20							
11	Nov-20	0.95	3.8					
12	Jan-20							
13	Apr-21							
14	Oct-21	0.72	4.74	2.06				
15	Oct-22	0.83	5.79					
16	Sep-23	0.81	4.66	3.05				
17	Oct-24	0.6	4.23					
18								
19								
20								
Coefficient of Variation:		0.37	0.35	0.22				
Mann-Kendall Statistic (S):		-11	-5	1				
Confidence Factor:		97.2%	76.5%					
Concentration Trend:		Decreasing	Stable					



Notes:

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Contingency well analytical results presented

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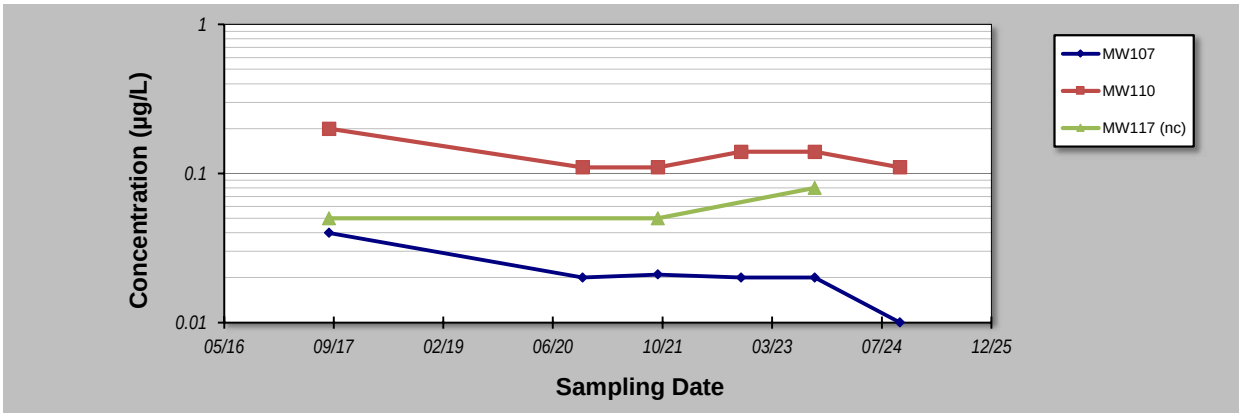
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	18-Jun-25	Job ID:	60676801
Facility Name:	RAAF TINDAL - On-Base Boundary/Central	Constituent:	PFOA (End of Dry Season)
Conducted By:	DDT	Concentration Units:	µg/L

Sampling Point ID:	MW107	MW110	MW117 (nc)				
Sampling Event	Sampling Date	PFOA (END OF DRY SEASON) CONCENTRATION (µg/L)						
1	Sep-17	0.04	0.2	0.05				
2	Nov-17							
3	Jan-18							
4	Mar-18							
5	Apr-18							
6	Dec-18							
7	Jan-19							
8	Feb-19							
9	Mar-19							
10	Apr-20							
11	Nov-20	0.02	0.11					
12	Jan-20							
13	Apr-21							
14	Oct-21	0.021	0.11	0.05				
15	Oct-22	0.02	0.14					
16	Sep-23	0.02	0.14	0.08				
17	Oct-24	0.01	0.11					
18								
19								
20								
Coefficient of Variation:		0.45	0.13	0.29				
Mann-Kendall Statistic (S):		-10	2	2				
Confidence Factor:		95.2%	59.2%					
Concentration Trend:		Decreasing	No Trend					



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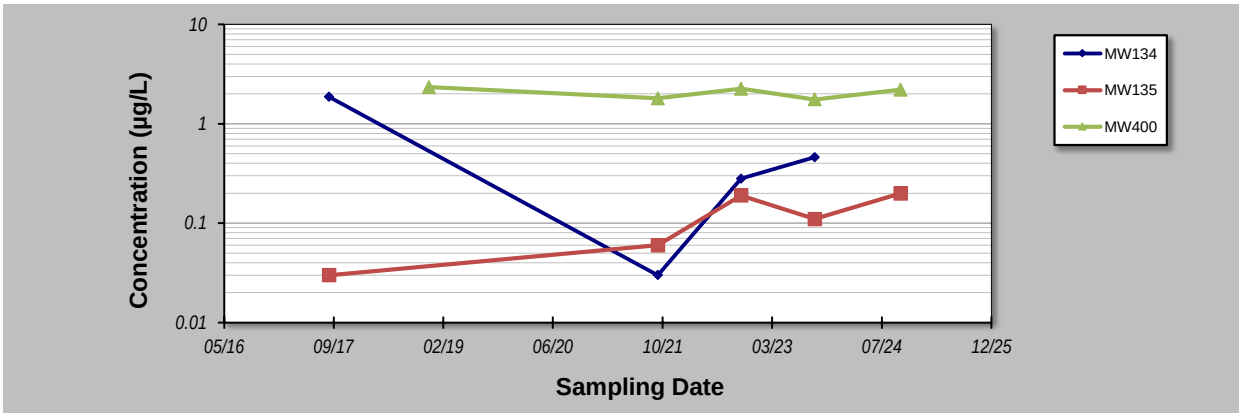
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **18-Jun-25**
Facility Name: **RAAF TINDAL - Off-Base Central**
Conducted By: **DDT**

Job ID: **60676801**
Constituent: **PFOS + PFHxS (End of Dry Season)**
Concentration Units: µg/L

Sampling Point ID:		MW134	MW135	MW400				
Sampling Event	Sampling Date	PFOS + PFHXS (END OF DRY SEASON) CONCENTRATION (µg/L)						
1	Sep-17	1.87	0.03					
2	Nov-17							
3	Jan-18							
4	Mar-18							
5	Apr-18							
6	Dec-18			2.34				
7	Jan-19							
8	Feb-19							
9	Mar-19							
10	Apr-20							
11	Nov-20							
12	Jan-20							
13	Apr-21							
14	Oct-21	0.03	0.06	1.80				
15	Oct-22	0.28	0.19	2.25				
16	Sep-23	0.46	0.11	1.76				
17	Oct-24		0.2	2.21				
18								
19								
20								
Coefficient of Variation:		1.25	0.64	0.13				
Mann-Kendall Statistic (S):		0	8	-4				
Confidence Factor:		37.5%	95.8%	75.8%				
Concentration Trend:		No Trend	Increasing	Stable				



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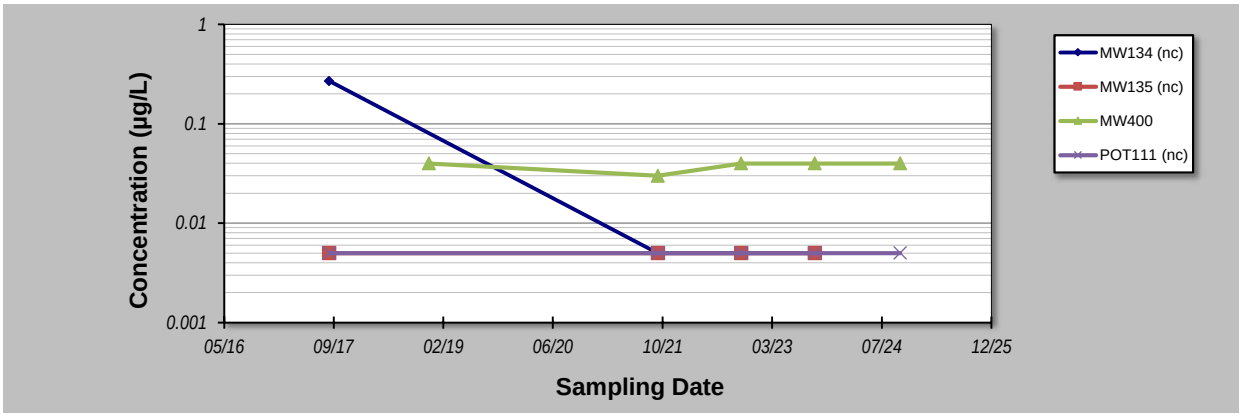
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	18-Jun-25	Job ID:	60676801
Facility Name:	RAAF TINDAL - Off-Base Central	Constituent:	PFOA (End of Dry Season)
Conducted By:	DDT	Concentration Units:	µg/L

Sampling Point ID:	MW134 (nc)	MW135 (nc)	MW400	POT111 (nc)			
Sampling Event	**Sampling Date**	**PFOA (END OF DRY SEASON) CONCENTRATION (µg/L)**					
1	Sep-17	0.27	0.005		0.005		
2	Nov-17						
3	Jan-18						
4	Mar-18						
5	Apr-18						
6	Dec-18			0.04			
7	Jan-19						
8	Feb-19						
9	Mar-19						
10	Apr-20						
11	Nov-20						
12	Jan-20						
13	Apr-21						
14	Oct-21	0.005	0.005	0.03	0.005		
15	Oct-22	0.005	0.005	0.04	0.005		
16	Sep-23	0.005	0.005	0.04	0.005		
17	Oct-24			0.04	0.005		
18							
19							
20							
Coefficient of Variation:		1.86	0.00	0.12	0.00		
Mann-Kendall Statistic (S):		-3	0	2	0		
Confidence Factor:		72.9%		59.2%	40.8%		
Concentration Trend:		No Trend		No Trend	Stable		



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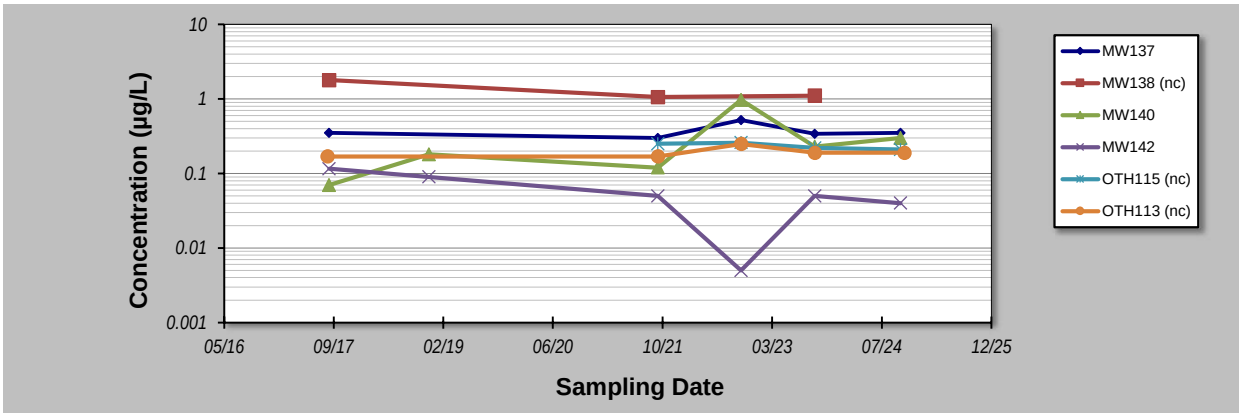
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **18-Jun-25**
Facility Name: **RAAF TINDAL - Off-Base Katherine Townsh**
Conducted By: **DDT**

Job ID: **60676801**
Constituent: **PFOS + PFHxS (End of Dry Season)**
Concentration Units: µg/L

Sampling Point ID:		MW137	MW138 (nc)	MW140	MW142	OTH115 (nc)	OTH113 (nc)	
Sampling Event	Sampling Date	PFOS + PFHXS (END OF DRY SEASON) CONCENTRATION (µg/L)						
1	Aug-17						0.17	
2	Sep-17	0.35	1.79	0.07	0.116			
3	Jan-18							
4	Mar-18							
5	Apr-18							
6	Dec-18			0.18	0.09			
7	Jan-19							
8	Feb-19							
9	Mar-19							
10	Apr-20							
11	Nov-20							
12	Jan-20							
13	Apr-21							
14	Oct-21	0.3	1.06	0.12	0.05	0.25	0.17	
15	Oct-22	0.52		0.97	0.005	0.26	0.25	
16	Sep-23	0.34	1.11	0.23	0.05	0.22	0.19	
17	Oct-24	0.35		0.3	0.04	0.21		
18	Nov-24						0.19	
19								
20								
Coefficient of Variation:		0.23	0.31	1.07	0.67	0.10	0.17	
Mann-Kendall Statistic (S):		1	-1	9	-10	-4	4	
Confidence Factor:		50.0%		93.2%	95.2%	83.3%	75.8%	
Concentration Trend:		No Trend		Prob. Increasing	Decreasing	Stable	No Trend	



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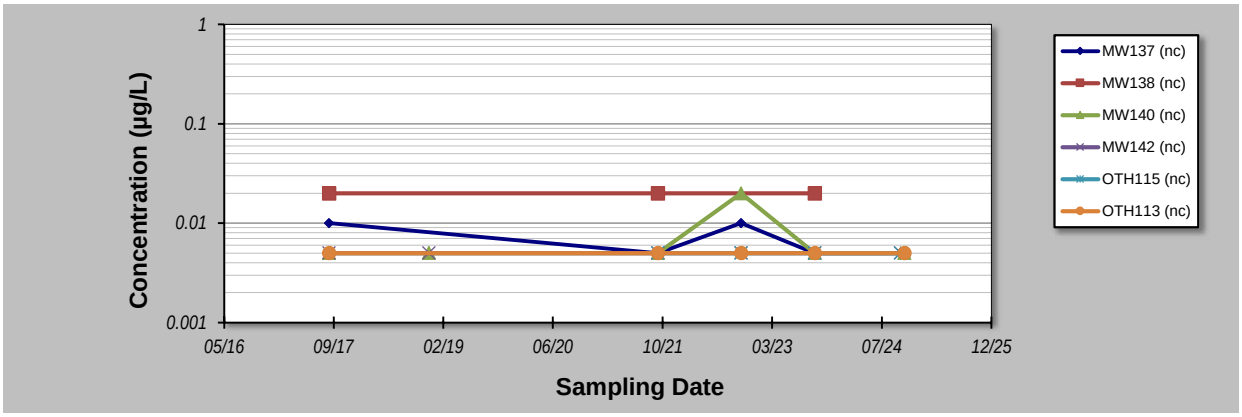
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **18-Jun-25**
Facility Name: **RAAF TINDAL - Off-Base Katherine Townsh**
Conducted By: **DDT**

Job ID: **60676801**
Constituent: **PFOA (End of Dry Season)**
Concentration Units: µg/L

Sampling Point ID:	MW137 (nc)	MW138 (nc)	MW140 (nc)	MW142 (nc)	OTH115 (nc)	OTH113 (nc)	
Sampling Event	**Sampling Date**	**PFOA (END OF DRY SEASON) CONCENTRATION (µg/L)**					
1	Sep-17	0.01	0.02	0.005	0.005		0.005	
2	Nov-17							
3	Jan-18							
4	Mar-18							
5	Apr-18							
6	Dec-18			0.005	0.005			
7	Jan-19							
8	Feb-19							
9	Mar-19							
10	Apr-20							
11	Nov-20							
12	Jan-20							
13	Apr-21							
14	Oct-21	0.005	0.02	0.005	0.005	0.005	0.005	
15	Oct-22	0.01		0.02	0.005	0.005	0.005	
16	Sep-23	0.005	0.02	0.005	0.005	0.005	0.005	
17	Oct-24	0.005			0.005	0.005		
18	Nov-24			0.005			0.005	
19								
20								
Coefficient of Variation:		0.39	0.00	0.82	0.00	0.00	0.00	
Mann-Kendall Statistic (S):		-4	0	1	0	0	0	
Confidence Factor:		75.8%		50.0%	39.3%	37.5%	40.8%	
Concentration Trend:		Stable		No Trend	Stable	Stable	Stable	



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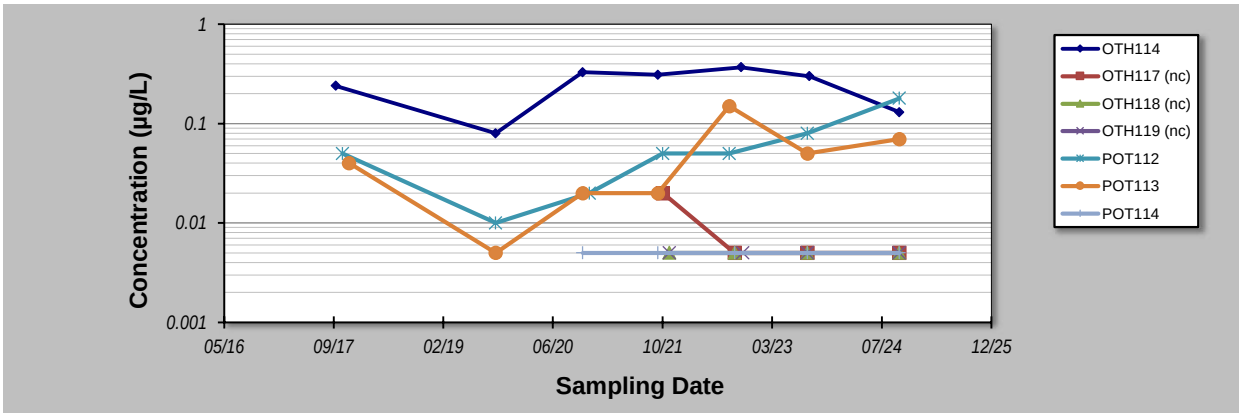
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **18-Jun-25**
Facility Name: **RAAF TINDAL - Off-Base West Katherine Riv**
Conducted By: **DDT**

Job ID: **60676801**
Constituent: **PFOS + PFHxS (End of Dry Season)**
Concentration Units: µg/L

Sampling Point ID:		OTH114	OTH117 (nc)	OTH118 (nc)	OTH119 (nc)	POT112	POT113	POT114
Sampling Event	Sampling Date	PFOS + PFHXS (END OF DRY SEASON) CONCENTRATION (µg/L)						
1	Oct-17	0.24						
2	Nov-17					0.05		
3	Dec-17						0.04	
4	Mar-18							
5	Apr-18							
6	Dec-18							
7	Jan-19							
8	Oct-19	0.08				0.01	0.005	
9	Nov-19							
10	Nov-20	0.33					0.02	0.005
11	Dec-20					0.02		
12	Oct-21	0.31					0.02	0.005
13	Nov-21		0.02			0.05		
14	Dec-21			0.005	0.005			
15	Aug-22					0.05	0.15	
16	Sep-22		0.005	0.005				0.005
17	Oct-22	0.37						
18	Nov-22				0.005			
19	Aug-23		0.005	0.005	0.005	0.08	0.05	0.005
20	Nov-23							
21	Sep-23	0.3						
22	Oct-24	0.13	0.005	0.005	0.005	0.18	0.07	0.005
23								
24								
25								
Coefficient of Variation:		0.43	0.86	0.00	0.00	0.90	0.96	0.00
Mann-Kendall Statistic (S):		1	-3	0	0	14	10	0
Confidence Factor:		50.0%	72.9%	37.5%	37.5%	97.5%	90.7%	40.8%
Concentration Trend:		No Trend	Stable	Stable	Stable	Increasing	Prob. Increasing	Stable



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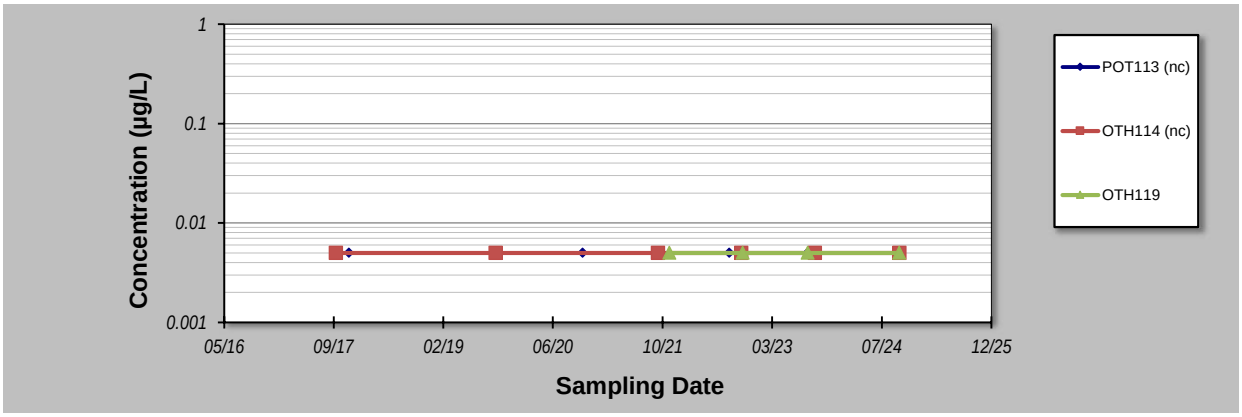
for Constituent Trend Analysis

Evaluation Date: **18-Jun-25**
Facility Name: **RAAF TINDAL - Off-Base West Katherine Riv**
Conducted By: **DDT**

Job ID: **60676801**
Constituent: **PFOA (End of Dry Season)**
Concentration Units: µg/L

Sampling Point ID:	POT113 (nc)	OTH114 (nc)	OTH119				
Sampling Event	**Sampling Date**	**PFOA (END OF DRY SEASON) CONCENTRATION (µg/L)**						
1	Sep-17							
2	Oct-17		0.005					
3	Nov-17							
4	Dec-17	0.005						
5	Apr-18							
6	Dec-18							
7	Jan-19							
8	Oct-19	0.005	0.005					
9	Nov-19							
10	Apr-20							
11	Nov-20	0.005						
12	Jan-20							
13	Apr-21							
14	Oct-21	0.005	0.005					
15	Dec-21			0.005				
16	Aug-22	0.005						
17	Sep-22							
18	Oct-22		0.005					
19	Nov-22			0.005				
20	Aug-23	0.005		0.005				
21	Sep-23		0.005					
22	Nov-23							
23	Oct-24	0.005	0.005	0.005				
24								
25								
Coefficient of Variation:		0.00	0.00	0.00				
Mann-Kendall Statistic (S):		0	0	0				
Confidence Factor:		37.9%	39.3%	37.5%				
Concentration Trend:		Stable	Stable	Stable				



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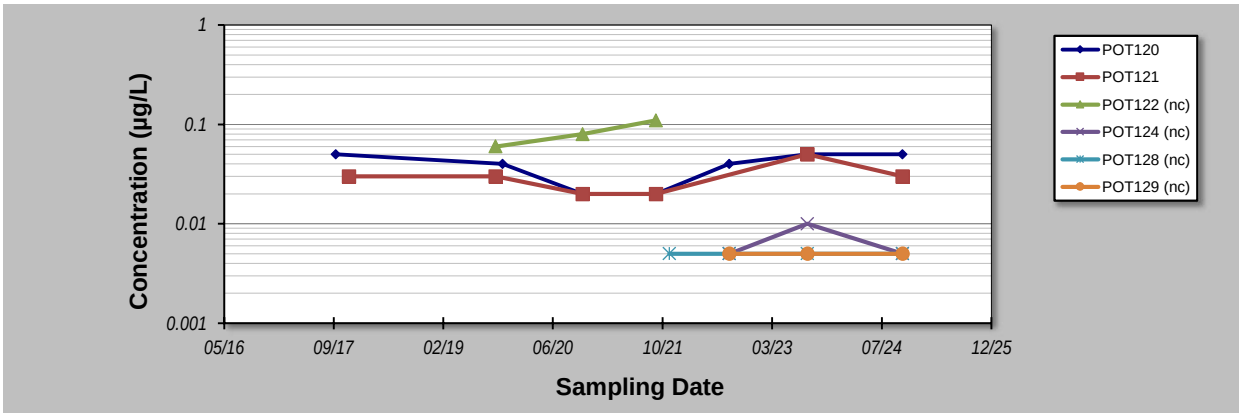
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 12-Jul-24
Facility Name: RAAF TINDAL - Off-Base West Katherine Riv
Conducted By: DDT

Job ID: 60676801
Constituent: PFOS + PFHxS (End of Dry Season)
Concentration Units: µg/L

Sampling Point ID:	POT120	POT121	POT122 (nc)	POT124 (nc)	POT128 (nc)	POT129 (nc)	
Sampling Event	Sampling Date	PFOS + PFHXS (END OF DRY SEASON) CONCENTRATION (µg/L)					
1	Sep-17						
2	Oct-17	0.05					
3	Nov-17						
4	Dec-17		0.03				
5	Sep-18						
6	Oct-18						
7	Nov-18						
8	Sep-19						
9	Oct-19		0.03	0.06			
10	Nov-19	0.04					
11	Sep-20						
12	Oct-20						
13	Nov-20	0.02	0.02	0.08			
14	Sep-21						
15	Oct-21	0.02	0.02	0.11			
16	Dec-21					0.005	
17	Aug-22	0.04				0.005	0.005
18	Sep-22				0.005		
19	Oct-22						
20	Nov-22						
21	Aug-23	0.05	0.05		0.01	0.005	0.005
22	Sep-23						
23	Oct-23						
24	Nov-23						
25	Oct-24	0.05	0.03		0.005	0.005	0.005
26							
27							
28							
29							
30							
Coefficient of Variation:		0.35	0.37	0.30	0.43	0.00	0.00
Mann-Kendall Statistic (S):		4	1	3	0	0	0
Confidence Factor:		66.7%	50.0%			37.5%	
Concentration Trend:		No Trend	No Trend			Stable	



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

Legend

Contingency well analytical results presented

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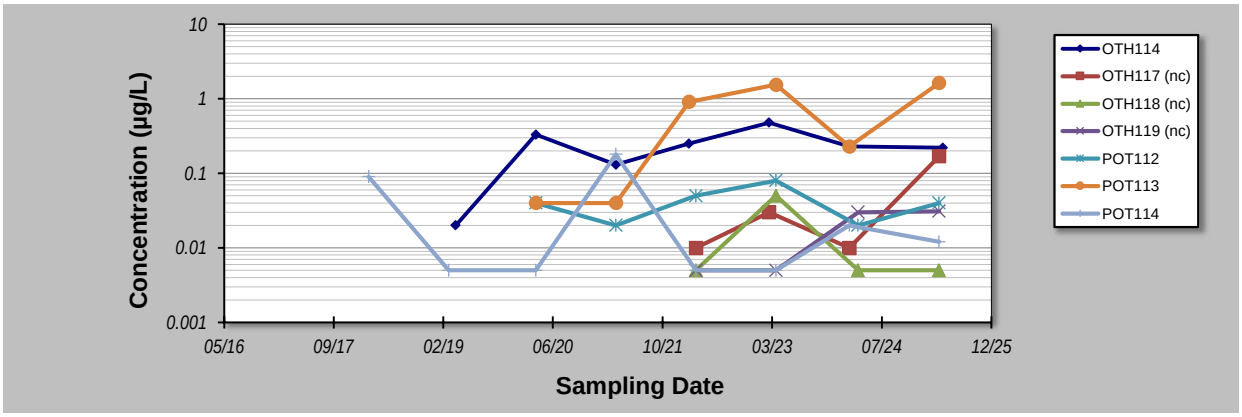
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **18-Jun-25**
Facility Name: **RAAF TINDAL - Off-Base West Katherine Riv**
Conducted By: **DDT**

Job ID: **60676801**
Constituent: **PFOS + PFHxS (End of Wet Season)**
Concentration Units: µg/L

Sampling Point ID:		OTH114	OTH117 (nc)	OTH118 (nc)	OTH119 (nc)	POT112	POT113	POT114
Sampling Event	Sampling Date	PFOS + PFHXS (END OF WET SEASON) CONCENTRATION (µg/L)						
1	Sep-17							
2	Nov-17							
3	Jan-18							
4	Mar-18							0.09
5	Apr-18							
6	Mar-19							0.005
7	Apr-19	0.02						
8	Jun-19							
9	Feb-20							
10	Apr-20	0.33				0.04	0.04	0.005
11	Nov-20							
12	Jan-20							
13	Feb-21							
14	Apr-21	0.13				0.02	0.04	0.18
15	Apr-22		0.01	0.005	0.005	0.05		0.005
16	Mar-22	0.25					0.91	
17	Mar-23	0.48	0.03					
18	Apr-23			0.05	0.005	0.08	1.55	0.005
19	Mar-24	0.23	0.01				0.23	0.02
20	Apr-24			0.005	0.03	0.02		
21	Apr-25		0.17	0.005	0.031	0.04	1.63	0.012
22	May-25	0.22						
23								
24								
25								
Coefficient of Variation:		0.61	1.40	1.38	0.83	0.53	1.01	1.58
Mann-Kendall Statistic (S):		3	3	-1	5	1	10	0
Confidence Factor:		61.4%	72.9%	50.0%	89.6%	50.0%	95.2%	45.2%
Concentration Trend:		No Trend	No Trend	No Trend	No Trend	No Trend	Increasing	No Trend



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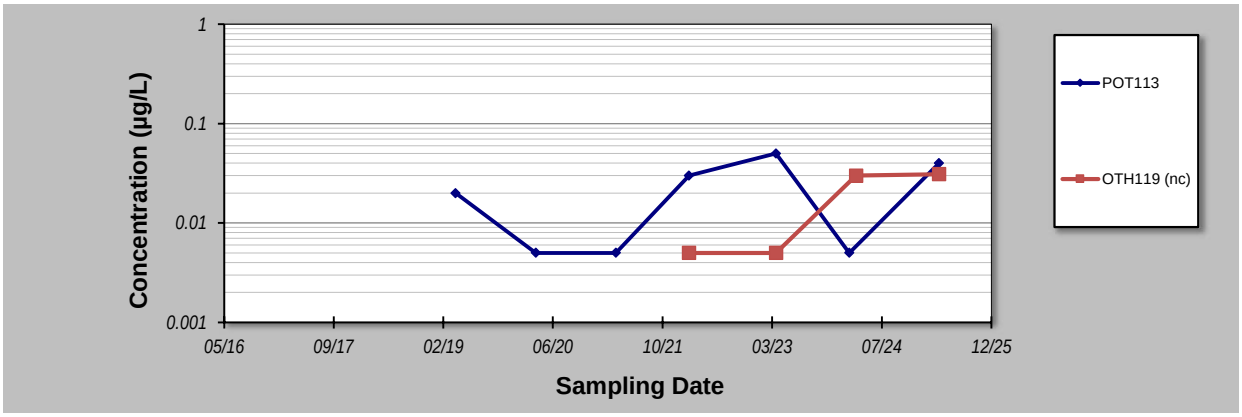
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: **18-Jun-25**
Facility Name: **RAAF TINDAL - Off-Base West Katherine Riv**
Conducted By: **DDT**

Job ID: **60676801**
Constituent: **PFOA (End of Wet Season)**
Concentration Units: µg/L

Sampling Point ID:	POT113		OTH119 (nc)				
Sampling Event	**Sampling Date**	**PFOA (END OF WET SEASON) CONCENTRATION (µg/L)**						
1	Sep-17							
2	Nov-17							
3	Jan-18							
4	Mar-18							
5	Apr-18							
6	Mar-19							
7	Apr-19	0.02						
8	Oct-19							
9	Feb-20							
10	Apr-20	0.005						
11	Nov-20							
12	Jan-20							
13	Feb-21							
14	Apr-21	0.005						
15	Apr-22							
16	Mar-22	0.03		0.005				
17	Mar-23							
18	Apr-23	0.05		0.005				
19	Mar-24	0.005						
20	Apr-24			0.03				
21	Apr-25	0.04		0.031				
22								
23								
24								
25								
Coefficient of Variation:		0.83		0.83				
Mann-Kendall Statistic (S):		6		5				
Confidence Factor:		76.4%		89.6%				
Concentration Trend:		No Trend		No Trend				



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